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Analysis of verbal classroom activity was made in high school classes. Techniques for re-coding, coding and analysing activity were discussed in detail in phase one. It was found that despite the lack of specified rules and despite individual differences in teaching philosophies of teachers, although classes differ somewhat in details, common elements underlie much of the teaching game, in that pupils and teachers follow a set of implicit rules with few deviations. The basic verbal maneuvers that the teacher and the pupil make in playing the game are pedagogical moves: structuring and soliciting, which are initiatory moves; and responding and reacting , which are reflexive moves. Soliciting, responding and reacting each accounts for slightly less than one third of the moves in a given classroom and structuring accounts for the remaining small fraction of moves. The teacher is the most active player in the game and discussion takes place within the substantive framework of the teacher's structuring. Players generally use the empirical mode of thought (fact stating and explaining) rather than the analytic mode (defining terms and interpreting statements) in dealing with the substantive material under discussion. The frequency of evaluative statements (opinioning and justifying) is also relatively low. As the chief solicitor, the teacher normally attempts to keep the game in focus by using three types of moves: substantive task/ explaining/ construction; substantive task/ fact-stating/ construction; and instructional task/ perform oral/ constructing. High school teachers have found the "teacher soliciting- pupil responding- teacher reacting" pattern of instruction to be the most effective method of instruction.

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COOPERATIVE RESEARCH PROJECT No. 2023

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THE LANGUAGE OF THE CLASSROOM

Meanings Communicated in High School Teaching

Part Two

Cooperative Research Project No. 2023

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in collaboration with

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CHAPTER ONE

BACKGROUND AND OBJECTIVES

This volume reports the second phase of a research project whose purpose is to study the teaching process through analysis of the linguistic behavior of teachers and students in the classroom. Observation of what goes on in elementary and secondary schools reveals that classroom activities are carried on in large part in verbal interaction between students and teachers; few classroom activities can be carried on without the use of language. This research therefore focuses on language as the main instrument of communication in teaching.

This chapter presents a review of the first phase of the research and a discussion of the objectives and procedures of the second phase of the project.

REVIEW OF PHASE ONE

The major objective of the initial stage was to describe the linguistic behavior of teachers and pupils in selected high school social studies classes. A subsidiary aim, viewed primarily as an exploratory phase of our general line of investigation, was to study the relationships of linguistic variables of classroom discourse to pupil learning and attitude change. (1)

The subjects were 15 teachers and 345 pupils in Problems of Democracy classes studying a unit on international trade. The 15 classes, located in seven high schools in the metropolitan New York area, ranged in size from 15 to 35 pupils, with a mean of 23 pupils.

The data collection involved three steps: (1) pre-testing; (2) recording class sessions; and (3) post-testing.

(1) Pre-testing. Before the experimental teaching sessions, students were tested to obtain estimates of their knowledge of the subject matter to be taught, attitudes toward the subject matter, and general intellectual ability. Knowledge of the subject matter was measured by a test devised in terms of the substantive and logical meanings included in the unit to be taught. Attitudes toward the study of economics were evaluated by an attitude scale developed during the research.*

Intellectual ability was estimated by a test consisting of vocabulary items from the I.E.R. Intelligence Scale CAVD (14). Average vocabulary scores ranged from 23.4 to 35.7, with a mean of 27.1 (perfect score: 40). There was thus considerable interclass variability in verbal intelligence, although the scores indicate that the distribution of ability among the students was skewed somewhat positively toward the upper range in comparison with various national samples; for example, in terms of a voting sample obtained by Thorndike and Gallup (15), the average score in the present sample falls in the 70th percentile.

---

* See Appendix D for test of knowledge of international trade and attitude scale.

(2) *Recording Class Sessions*. To establish reasonable limits within which the classes could carry on their work and to provide a relatively stable basis both for testing changes in knowledge and for analyzing the substantive meanings of the classroom discourse, a unit of instruction was selected for the participating classes. This unit was based on the first four chapters of the pamphlet *International Economic Problems*, written by Dr. James Calderwood (3). Teachers were asked to teach in any manner they believed appropriate; no effort was made to control their methods of instruction. The experimental class sessions consisted of four periods on four successive days during the regular school schedule. Transcriptions of tape recordings of four sessions for each of the 15 classes served as the basic data for the analysis of the verbal interaction of teachers and pupils.

(3) *Post-testing*. After the four class sessions, students were again tested to obtain estimates of knowledge of the subject matter and attitudes toward the study of economics.

Theoretical View of Classroom Behavior

We began with the assumptions that the primary function of language is the communication of meaning and that describing linguistic events in the classroom in terms of the meanings expressed by teachers and students is a potentially fruitful direction for research. Our conception of the nature of meaning was derived in large measure from Wittgenstein's view that "the meaning of a word is its use in the language" (17:20). Equation of meaning and use suggested that the basic problem was to identify the distinctive functions language actually serves in the verbal interplay between pupils and teachers.

In searching for the meaning of what teachers and students communicate in the classroom, we found it helpful to identify (1) what the speaker was doing *pedagogically* with the words he spoke at a given time; (2) *what* he was saying (i.e., the content of his statement); and (3) the *feeling tone* or emotional meaning conveyed by the communication. That is, in analyzing the utterance of a teacher or of a student at a given point in class discussion, we were first of all concerned with the pedagogical significance of what the speaker was saying -- whether, for example, he was structuring the class discussion by launching or focusing attention on a topic or problem, eliciting a response from a member of the class, responding to a question posed by a previous speaker, or reacting to a comment previously made. Second, we were interested in identifying the content of the communication -- what topic was under discussion, what information the question called for, what explanation was being offered, or what assignment was being made. Furthermore, in addition to the pedagogical function of the language and the content of the message, we were concerned with both the explicit and the implicit emotional aspects of the speaker's vocal expression.

The basic methodological problem was to devise the means whereby these three dimensions of meaning could be defined operationally. In dealing with this problem, we were again influenced by Wittgenstein's approach to language. In his view, "the speaking of language is part of an activity, or a form of life" (17:11). Language is adaptable to many uses and functions in carrying on activities that are essentially linguistic in nature. Wittgenstein refers to these activities as "language games," a metaphor used to point up the fact that linguistic activities assume different forms and structures according to the functions they come to serve in various contexts. A game has a definite structure, and there are certain moves that a player is bound to make insofar as he is playing the game at all. These are some of the verbal activities that he identifies as language games (17:11-12):

Giving orders and obeying them
Reporting an event
Forming and testing a hypothesis
Play acting
Making a joke and telling it
Making up a story and reading it

Carrying the game metaphor a step further, Wittgenstein observes that verbal activities in various contexts follow language rules that govern the use of words in these activities. Learning to participate in various types of language activities is therefore very much like learning to play a game. Participants have to learn the rules, the purpose of the rules, and how the various parts of the game are related; only if one learns these rules can he play the game successfully.

Viewing classroom discourse as a kind of language game was a useful approach for purposes of this research, in that it suggested a framework for analysis within which the various dimensions of meaning could be defined in operational terms. Teaching is similar to most games in at least two respects. First, it is a form of social activity in which the players -- teachers and pupils -- fill different but complementary roles. Furthermore, teaching is governed by ground rules of play which guide the actions or moves made by participants. We reasoned that if we could identify the various types of verbal moves teachers and students make in playing the game of teaching and the rules they implicitly follow in making these moves, we would be in a position to investigate the functions these verbal actions serve in classroom discourse and hence the meanings which are communicated.

Examination of the transcripts of classroom discussions suggested that the actions that characterize the verbal interplay of pupils and teachers could be classified in four major categories. We labeled these basic verbal actions pedagogical moves and classified them in terms of the functions they serve in classroom discourse:

> Structuring. Structuring moves serve the pedagogical function of setting the context for subsequent behavior by launching or halting-excluding interaction between pupils and teachers and by indicating the nature of the interaction. For example, teachers frequently begin a class period with a structuring move in which they focus attention on the topic or problem to be discussed during that session.
>
> Soliciting. Moves in this category are designed to elicit a verbal response, encourage persons addressed to attend to something, or elicit a physical response. All questions are solicitations, as are commands, imperatives and requests.
>
> Responding. These moves bear a reciprocal relationship to soliciting moves and occur only in relation to them. Their pedagogical function is to fulfill the expectation of soliciting moves. Thus, students' answers to teachers' questions are classified as responding moves.
>
> Reacting. These moves are occasioned by a structuring, soliciting, responding, or another reacting move, but are not directly elicited by them. Pedagogically, these moves serve to modify (by clarifying, synthesizing or expanding) and/or to rate (positively or negatively) what has been said previously. Reacting moves differ from responding moves, in that while a responding move is always directly elicited by a solicitation, preceding moves serve only as the occasion for reactions. Rating by a teacher of a student's response, for example, is designated a reacting move.

As we proceeded with the analysis of the data in terms of pedagogical moves, it became evident that these moves occur in certain cyclical patterns or combinations which we designated teaching cycles. A teaching cycle begins either with a structuring move or with a soliciting move, both of which are initiating maneuvers; that is, they serve the function of getting a cycle underway. In contrast, responding and reacting moves are reflexive in nature; a responding move is elicited by a soliciting move and a reacting move is occasioned by a preceding move and therefore they cannot begin a cycle. A cycle frequently begins, for example, with a soliciting move by the teacher in the form of a question, continues with a responding move by the student addressed, and ends with a rating reaction by the teacher. A cycle might also get underway with a structuring move by the teacher in which he focuses attention on the topic to be discussed, continue with a question related to this topic, and end with responding moves by one or more pupils. The concept of teaching cycles makes it possible to identify patterns in the verbal exchange between teachers and students and thus to describe the ebb and flow of the teaching process as it develops over time.

In addition to meaning from the viewpoint of the pedagogical significance of what teachers and students communicate, we were also interested in the dimension of meaning represented by the content of the messages communicated. Analysis of the classroom protocols from this point of view revealed that teachers and students communicate four functionally different types of meanings: (1) substantive meanings with associated (2) substantive-logical meanings; and (3) instructional meanings with associated (4) instructional-logical meanings.

Substantive meanings refer to the subject matter discussed in the class; that is, specific concepts such as multilateral trade and generalizations involving, for example, the relation between specialization and the factors of production. Substantive-logical meanings refer to the cognitive processes involved in dealing with the subject matter, such as defining, explaining, fact stating, interpreting, opining and justifying. Instructional meanings refer to the social-managerial aspects of the classroom, such as assignments, materials and routine procedures which are part of the instructional process. Instructional-logical meanings refer to distinctively didactic verbal processes such as those involved in rating negatively and positively, explaining procedures, and giving directions.

As we developed techniques for analyzing classroom discourse in terms of pedagogical units, we attempted to develop parallel methods for determining the emotional meanings of each of these units. This approach, however, did not prove feasible; instead, a procedure utilizing larger time samples of the discourse was developed. This provided a reliable basis for characterizing the emotional style of the discourse in terms of dimensions of meaning suggested by Osgood, Suci and Tannenbaum (11): (1) valence; (2) strength; and (3) activity.

Analysis of the Data

Coding System. The four types of pedagogical moves described above were the basic units of analysis. Within each pedagogical move the four types of meanings described in the preceding section were identified when they appeared in the discourse and were coded according to categories 3 through 8 summarized below.*

(1) SPEAKER: indicates source of utterance

Teacher (T); Pupil (P); Audio-Visual Device (A)

(2) TYPE OF PEDAGOGICAL MOVE: reference to function of move

- Initiatory Moves
  - Structuring (STR): sets context for subsequent behavior, launches, halts/excludes
  - Soliciting (SOL): directly elicits verbal, physical, or mental response; coded in terms of response expected
- Reflexive Moves
  - Responding (RES): fulfills expectation of solicitation; bears reciprocal relation only to solicitation
  - Reacting (REA): modifies (by clarifying, synthesizing, expanding) and/or rates (positively or negatively); occasioned by previous move but not directly elicited; reactions to more than one previous move coded REA
  - Not Codable (NOC): function uncertain because tape inaudible

(3) SUBSTANTIVE MEANING: reference to subject matter topic. (Based on a content analysis of the pamphlet by Calderwood)

- Trade (TRA)
  - Trade -- Domestic and International (TDI)
  - Trade -- Money and Banking (TMB)
  - Trade -- Who Trades with Whom (TWH)
- Factors of Production and/or Specialization (FSP)
  - Factors of Production -- Natural Resources (FNR)
  - Factors of Production -- Human Skills (FHS)
  - Factors of Production -- Capital Equipment (FCE)
  - Factors Other Than Natural Resources, Human Skills, and Capital Equipment Occurring in Discussion of Reasons for Trade (FRE)
- Imports and/or Exports (IMX)
  - Foreign Investment -- General (FOR)
    - Foreign Investment -- Direct (FOD)
    - Foreign Investment -- Portfolio (FOP)

---

* Underlining indicates actual coding terminology. Complete system for analysis given in Appendix A.

Barriers to Trade (BAR)
  Barrier -- Tariffs (BAT)
  Barrier -- Quotas (BAQ)
  Barrier -- Exchange Control (BAE)
  Barrier -- Export Control (BAX)
  Barrier -- Administrative Protectionism (BAA)
Promoting Free Trade (PFT)
Relevant to Trade (REL)
Not Trade (NTR)

(4) SUBSTANTIVE - LOGICAL MEANING: reference to cognitive process involved in dealing with the subject matter under study

Analytic Process: use of language or established rules of logic
  Defining-General (DEF): defining characteristics of class or term with example of items within class explicitly given
    Defining-Denotative (DED): object referent of term
    Defining-Connotative (DEC): defining characteristics of class or term
    Interpreting (INT): verbal equivalent of a statement, slogan, aphorism, or proverb
Empirical Process: sense experience as criterion of truth
  Fact Stating (FAC): what is, was, or will be without explanation or evaluation; account, report, description, statement of event or state of affairs
  Explaining (XPL): relation between objects, events, principles; conditional inference; cause-effect; explicit comparison-contrast; statement of principles, theories or laws
Evaluative Process: set of criteria or value system as basis for verification
  Opining (OPN): personal values for statement of policy, judgment or evaluation of event, idea, state of affairs; direct and indirect evaluation included
  Justifying (JUS): reasons or argument for or against opinion or judgment
Logical Process Not Clear (NCL): cognitive process involved not clear

(5) NUMBER OF LINES IN 3 AND 4 ABOVE

(6) INSTRUCTIONAL MEANINGS: reference to factors related to classroom management

Assignment (ASG): suggested or required student activity; reports, tests, readings, debates, homework, etc.

Material (MAT): teaching aids and instructional devices

Person (PER): person as physical object or personal experiences

Procedure (PRC): a plan of activities or a course of action

Statement (STA): verbal utterance, particularly the meaning, validity, truth or propriety of an utterance

Logical Process (LOG): function of language or rule of logic; reference to definitions or arguments, but not presentation of such

Action-General (ACT): performance (vocal, non-vocal, cognitive, or emotional) the specific nature of which is uncertain or complex

Action-Vocal (ACV): physical qualities of vocal action

Action-Physical (ACP): physical movement or process

Action-Cognitive (ACC): cognitive process, but not the language or logic of a specific utterance; thinking, knowing, understanding, listening

Action-Emotional (ACE): emotion or feeling, but not expression of attitude or value

Language Mechanics (LAM): the rules of grammar and/or usage

(7) INSTRUCTIONAL-LOGICAL MEANING: reference to cognitive processes related to the distinctly didactic verbal moves in the instructional situation

- Analytic Process: see (4) above
  - Defining-General (DEF)
    - Defining-Denotative (DED)
    - Defining-Connotative (DEC)
  - Interpreting (INT)
- Empirical Process: see (4) above
  - Fact Stating (FAC)
  - Explaining (XPL)
- Evaluative Process
  - Opining (OPN): see (4) above
  - Justifying (JUS): see (4) above
  - Rating: reference to metacommunication; usually an evaluative reaction (REA)
    - Positive (POS): distinctly affirmative rating
    - Admitting (ADM): mild or equivocally positive rating
    - Repeating (RPT): implicit positive rating when statement (STA) is repeated by another speaker; also for SOL to repeat vocal action (ACV)
    - Qualifying (QAL): explicit reservation stated in rating exception
    - Not Admitting (NAD): rating that rejects by stating the contrary; direct refutation or correction excluded

Negative (NEG): distinctly negative rating
Positive/Negative (PON): SOL requesting positive or negative rating
Admitting/Not Admitting (AON): SOL asking to permit or not permit procedure or action
Extralogical Process: SOL expecting physical action or when logical nature of verbal response cannot be determined
Performing (PRF): asking, demanding, explicit directive or imperative
Directing (DIR): SOL with or without stated alternatives; asking for directive, not permission for specific action
Extralogical Process Not Clear (NCL): extralogical process involved not clear

(8) NUMBER OF LINES IN 6 AND 7 ABOVE

Each pedagogical move is coded as follows:

(1) / (2) / (3) / (4) / (5) / (6) / (7) / (8)

(1) Speaker
(2) Type of Pedagogical Move
(3) Substantive Meaning
(4) Substantive-Logical Meaning
(5) Number of Typescript Lines in (3) and (4)
(6) Instructional Meaning
(7) Instructional-Logical Meaning
(8) Number of Typescript Lines in (6) and (7)

Coding the Protocols. The following excerpt from one of the coded protocols illustrates the coding procedures and interpretation of the coded information.

Excerpt From Protocol

Teacher (Move #1): Now, in order to pacify, or help satisfy, certain groups in American industry and American politics who want high protective tariffs, or who are clamoring for protection, we have inserted into our reciprocal agreements two -- what you might call -- safeguards which are coming up now as President Kennedy looks for greater authority in the tariff business. (Move #2): What have we inserted in here to give an element of protection or to stifle the outcries of American businessmen who want protection? Two clauses which we call . . .? Yes?

. . .

Pupil (Move #3): The peril point and the escape clause.
Teacher (Move #4): Right. The peril point and the escape clause.

Code

Move #1 T/STR / BAT / XPL / 7 / - / - / -
Move #2 T/SOL / BAT / FAC / 3 / - / - / -
Move #3 P/RES / BAT / FAC / 1 / - / - / -
Move #4 T/REA / BAT /- / - / STA / POS / 1

Interpretation

The teacher focuses on a substantive area by explaining something having to do with tariffs to the extent of seven lines (Move #1). He then solicits for three lines with the expectation that a factual response on tariffs will be given (Move #2). A pupil gives a one-line response by stating a fact about tariffs (Move #3). The teacher positively evaluates the statement by the pupil (Move #4).

Emotional Meanings. The semantic differential technique was used to describe each teacher's emotional style in terms of the meanings he conveyed along three dimensions: valence, activity, and strength (11). Since it seemed reasonable to assume that our interpretations of the emotional meanings expressed by teachers would be quite different from those of the typical high school students who participated in the research, it was decided that emotional meanings should be analyzed from the point of view of student observers. Judges in this part of the study were 11th grade students in a communications class in a senior high school similar to those who participated in the experimental classes. Because of the confidential nature of the tape recordings, ratings were obtained only for thirteen teachers who consented to have recordings of their classes played for persons other than regular members of the research staff. These ratings served as the basis for analyzing the emotional meanings communicated by the teachers.

Results of Phase One

Perhaps the most striking aspects of the results are the remarkable similarities among many of the teachers and classrooms and the stability of individual classes over the four sessions. The data reveal a consistent and generally stable pattern of pedagogical discourse.

1. Teachers dominate the verbal activities of the classrooms studied. The teacher-pupil ratio in terms of lines spoken is approximately 3 to 1; in terms of moves, the ratio is about 3 to 2. The volume of total verbal output is thus considerably greater for the teacher than for the pupil.

2. The pedagogical roles of the teacher and the pupil are clearly defined in terms of the frequency of behavior in each category of pedagogical moves. The teacher is responsible for structuring the lesson, for soliciting responses from pupils and for reacting to pupils' responses. The pupil's primary task is to respond to the teacher's solicitation. Occasionally the pupil reacts to preceding moves, but he rarely uses the reacting move to rate previous action. Only infrequently does the pupil solicit a response from the teacher or from another pupil. Seldom does the pupil spontaneously structure the discourse; when he uses a structuring move he frequently presents it as the fulfillment of a specific assignment made by the teacher, which usually involves a debate or a report.

3. Structuring moves account for about six per cent of the discourse in terms of moves spoken. Soliciting, responding and reacting each account for approximately 30 per cent of the moves. The classes vary somewhat from this pattern, but for the four moves the distribution of variations is fairly restricted, with most classes clustering within a few percentage points of each other. Furthermore, in each of the classes the proportion of moves devoted to each of the pedagogical moves tends to be generally stable over the four sessions. This reflects a consistent style of play within each class.

4. Analysis of teaching cycles centers on the dimensions of initiator (teacher or pupil) of the cycle, pattern of pedagogical moves within the cycle, and the rate at which cycles occur. Classes vary in the extent to which teachers initiate teaching cycles; generally, teachers initiate about 85 per cent of the cycles. Analysis of cycle pattern indicates that the basic verbal interchange in the classroom is the soliciting-responding pattern. Teachers often shape and frame this basic pattern with reacting moves and occasionally with structuring moves, although teachers differ in the extent to which they use the structuring and reacting moves. Classes also differ in the rate at which verbal interchanges take place; the average rate is slightly less than two cycles per minute.

5. In approximately two-thirds of the moves and about three-fourths of the lines speakers refer to or talk about substantive material, that is, the subject matter of international trade. Of all the categories of analysis, classes vary most widely in the substantive meanings expressed. This finding was not anticipated, since the major restriction imposed on the teachers by the research procedure was specification of the substantive material to be covered.

6. With respect to the substantive-logical meanings, approximately one-half of all moves involve empirical meanings (fact stating and explaining). Speakers use the analytic mode (defining and interpreting) and the evaluative mode (opining and justifying) much less frequently; each of these two modes accounts for about one-tenth of the moves in any class. Thus, a major proportion of the discourse in the classes studied is devoted to stating facts about and explaining principles and problems of international trade, while considerably less of the discourse is concerned either with defining terms and interpreting statements or with expressing and justifying personal opinions about economic issues.

7. In almost one-half of the moves and approximately one-fourth of the lines of the discourse, speakers convey instructional meanings. It is chiefly the teacher who expresses the instructional meanings. A large proportion of these meanings might be viewed as metacommunications, in that they involve teacher comments about preceding comments by pupils. Other instructional categories that occur with relative frequency are procedures, materials, and assignments. All other instructional categories account for very little of the discourse.

8. The instructional-logical meanings that occur most frequently involve fact stating, usually about procedures, assignments, and other instructional matters. A substantial proportion of statements in this area also deal with teachers directing pupils to perform various actions. Almost all of the remaining instructional-logical entries involve some form of rating reaction by the teacher.

9. With respect to the analysis of emotional meanings, teachers maintain a relatively stable emotional style, insofar as the dimensions of potency and activity are concerned, and, to a lesser degree, in terms of valence. Teachers thus tend to be consistent over time in the kinds of emotional meanings they convey to students.

The Language Game of Teaching

These results provide a description of the language game of teaching. Despite the fact that the rules of this game are not explicitly stated for any of the players, teachers and students in the classrooms under study obviously follow a set of implicit rules with few deviations. These rules define the teaching game. Although classes differ somewhat in details, for the purposes of an initial description of the classroom game, the results indicate that common elements underlie much of the teaching game, in that pupils and teachers follow a consistent set of language rules.

The classroom game involves one player called the teacher and one or more players called pupils. The object of the game is to carry on a linguistic discourse about subject matter, and the final "payoff" of the game is measured by the amount of learning displayed by the pupils after a given period of play. In playing the game, each player must follow a set of rules. If one plays the role of teacher, he will follow one set of rules; if one plays the role of pupil, he will follow a somewhat different, though complementary, set of rules. In fact, the first rule, which might be called "the rule of rules," is that if one is to play the game at all, he will consistently follow the rules specified for his role.

Within the general set of rules defining the game, there are individual differences among teachers and classes in style of play. In one classroom, the teacher or pupils may specialize in one kind of move or sequence of moves, while in another class the players may specialize in a slightly different pattern of discourse. Notwithstanding these variations in style and differences in specialization of moves, the game is played by a consistent set of general rules. These rules are rarely made explicit during the course of play; more often, they are defined implicitly by the ways in which teachers and pupils use these moves. It follows then that if one is to understand the rules of classroom behavior, he must study the functions that the pedagogical moves actually serve in the discourse of teachers and pupils.

OBJECTIVES AND PROCEDURES OF PHASE TWO

Objectives

The results of Phase One clearly suggest that more detailed study of the ways in which the functions of pedagogical moves are carried out would help to identify the rules implicitly followed by teachers and pupils in the classroom. If the sequence of soliciting-responding moves together with the shaping and framing of this basic sequence by reacting and structuring moves does indeed define the general pattern of pedagogical discourse that occurs most commonly in the teaching game, then the functions of these moves and their recurrent patterning in the form of teaching cycles deserve detailed investigation. This is the major task to which the second stage of the research reported in this volume addresses itself. A subsidiary aim, viewed largely as an exploratory phase of the general line of research, is to study the relationships of linguistic variables to pupil learning.

Procedures

To accomplish these aims, the system for analysis developed in the first phase of the research was expanded to include categories dealing with the functions of the four pedagogical moves and the ways in which teachers and pupils carry out these functions in the classroom. Data used in the analysis were the

the tape recordings and verbatim transcriptions of the 60 class sessions in 15 high school social studies classes collected in the first stage of the research.

The additions to the code for analysis will be described in detail in Chapters Three through Six, but at this point we report briefly the development of the additional categories of analysis and the procedures for coding the classroom protocols and processing the data. Expansion of the system for analysis was a long and detailed process requiring the interaction of several members of the research staff who reviewed and revised successive approximations of the supplementary categories in the light of the classroom protocols. This procedure provided an immediate empirical check for the abstract concepts of analysis that gradually emerged in the course of the work. This continuing encounter between the abstract, theoretical concepts and the empirical data of classroom discourse provided a fruitful and realistic means of expanding the system for analysis.

In view of the complexity inherent both in the material and in the system for analysis, it seemed unreasonable to expect that any one member of the research staff, no matter how well trained, would be able to code large sections of the data reliably without the checks offered by consultation with another coder. Therefore, procedures similar to those followed in the first phase of the research were used in coding the data: (1) each protocol of a single class session was first coded by one member of the coding team; (2) this initial coding was then reviewed by a second person who noted his disagreements with the original analysis; (3) finally, these disagreements were arbitrated by two coders, one of whom was not involved in step (1) or step (2). Despite the intrinsic difficulties involved in the analysis, this procedure resulted in a consistently high level of reliability in coding.

After the protocols had been coded, the data were transferred to data processing cards, and a program was prepared for the IBM 7090 computer. This program consisted essentially of a series of tabulations and cross tabulations computed by number and percentage of moves and lines in each category for each class and for all classes combined. The analysis of data in various categories was made on the basis of number of moves and of lines, but because classes differed somewhat in total time devoted to the four recorded sessions, the final results were converted to percentages of total moves and of total lines in each category of analysis.

Although preliminary studies conducted during the course of developing the supplementary categories of the content analysis system had indicated high agreement among coders, it was necessary to test the reliability of the categories to obtain a quantitative estimate of the degree of reliability for each of the categories considered in the research. The results are reported in Chapters Three, Four and Five. The data support the conclusion that the system devised for the analysis of the pedagogical moves is highly reliable.

The five coders who provided the data for the reliability test also participated in development of the code for analysis. Although the material used for estimating reliability was not used in developing the code, and thus represented an independent sample of discourse, the researchers who worked on various stages of the content analysis continually interacted, discussed problems of coding, and probably developed, over time, a shared perspective which in part accounted for the high agreement in the final coding. A rigorous attempt has been made to make this perspective explicit in the definitions of the categories and in the rules for coding.

Plan of the Report

Chapter Two presents an overview of the four types of pedagogical moves in the discourse of the classrooms studied. The purpose is to provide the setting for analysis of the soliciting and responding moves in Chapter Three, the structuring move in Chapter Four, and the reacting move in Chapter Five. Chapter Six deals with the sequential patterning of pedagogical moves in the form of teaching cycles. Chapter Seven concludes the report with a discussion of the results in terms of the rules of the classroom game and with a brief discussion of promising lines for further investigation.

CHAPTER TWO

PEDAGOGICAL MOVES IN CLASSROOM DISCOURSE

To provide the setting for the analyses of the pedagogical moves and teaching cycles in subsequent chapters, this chapter presents a brief overview of the roles of the teacher and the pupil in the classroom game in terms of frequency of behavior in the four categories of pedagogical moves. The data are summarized for all 15 classes combined over the four sessions. Differences among the individual classes are therefore not apparent. However, one of the striking aspects of the results of the first phase of the research was the remarkable similarity among the teachers and classrooms studied and the stability of individual classes over the four sessions. There were, of course, individual differences among classes in the patterns of discourse, and these will be discussed in subsequent chapters dealing with the four types of pedagogical moves and teaching cycles.

DISTRIBUTION OF PEDAGOGICAL MOVES

Fundamental to the analysis of any game is identification of the players and description of the maneuvers the participants make in playing the game. In teaching, the players play two roles: the role of the teacher and the role of the pupil; one or more participants may play each of these two roles. The basic maneuvers teachers and pupils make in playing the teaching game are labeled pedagogical moves.

Data relating to the frequency with which participants in the classes studied speak the four types of moves are summarized below:

Pedagogical Move		Percentage of Moves	Percentage of Lines *
Soliciting	SOL	33.2	22.6
Responding	RES	28.3	20.5
Structuring	STR	5.5	18.1
Reacting	REA	30.0	37.5
(Not Codable)	NOC	3.0	1.3

N (Moves) = 15,488
N (Lines) = 42,811

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* A line is defined as a 4.5 inch segment of typescript.

Viewing the discourse of the classes as a whole without reference to the speakers of the moves, three categories of moves -- soliciting (SOL), responding (RES), and reacting (REA) -- account for similar percentages of the discourse. Each of these moves accounts for about 30 per cent of all moves spoken in the 15 classes. In contrast, a very small percentage of the moves, about 5.5 per cent, are structuring moves (STR). Only three per cent of the moves were not codable (NOC) because of technical difficulties in transmission.

If these data are considered in terms of percentage of lines, the picture is somewhat different. Reacting moves account for three-eighths of the lines spoken, and the remaining five-eighths are just about equally distributed among the remaining three moves -- soliciting, responding and structuring. From this perspective, structuring assumes a larger role in the discourse than it did when the percentage of moves was considered. This is due to the fact that although structuring moves occur less frequently in the discourse, they tend to be longer in terms of lines than the other moves.

ROLES OF THE TEACHER AND THE PUPIL

The teacher and the pupil play different but complementary roles in the classroom game. Teachers participate much more actively than students; they make the majority of pedagogical moves and speak the majority of lines. Results of the first phase of the research revealed that the teacher-pupil ratio in terms of moves spoken is approximately 3 to 2; in terms of lines spoken the ratio is about 3 to 1. Regardless of the unit considered, the volume of total verbal output is therefore considerably greater for teachers than it is for pupils.

The roles of the teacher and the pupil are further defined in terms of frequency of behavior in each category of pedagogical moves as indicated by the data summarized below:

Pedagogical Move		Total	Percentage of Moves by Teachers	Percentage of Moves by Pupils	Percentage of Moves by Audio-Visual Devices
Soliciting	SOL	100.	86.0	14.0	0
Responding	RES	100.	12.0	88.0	0
Structuring	STR	100.	86.0	12.0	2.0
Reacting	REA	100.	81.0	19.0	0

N (SOL) = 5,135
N (RES) = 4,385
N (STR) = 854
N (REA) = 4,649

The teacher dominates the structuring, soliciting and reacting moves in that he speaks 86 per cent, 86 per cent and 81 per cent of these moves respectively. In contrast, the teacher is responsible for only 12 per cent of the responding moves. Control by the teacher of three of the pedagogical moves leaves the pupil with a very limited role to play in classroom discussions. The pupil controls the responding move, as demonstrated by the fact that he speaks 88 per cent of all moves of this type. The pupil reacts infrequently; his reactions account for only 19 per cent of all reacting moves. Even less frequently does the pupil solicit or structure; he is responsible for only 14 per cent and 12 per cent of these moves respectively.

Differences in the role patterns of the teacher and the pupil are also apparent when the percentage of the teacher's and the pupil's discourse devoted to each of the moves is considered. Data relating to the percentage distribution of moves and lines in the teacher's discourse (that is, moves and lines spoken by the 15 teachers in all sessions) are summarized below:

Pedagogical Move		Percentage of Teacher's Moves	Percentage of Teacher's Lines
Soliciting	SOL	46.6	28.0
Responding	RES	5.5	6.8
Structuring	STR	7.7	20.1
Reacting	REA	39.2	44.7
(Not Codable)	NOC	1.0	0.4

N (Moves) = 9,565
N (Lines) = 30,897

The teacher's principal responsibilities are to solicit and to react. Soliciting accounts for 46.6 per cent and reacting for 39.2 per cent of the teacher's moves. In contrast, very much smaller percentages of the teacher's discourse are responding and structuring moves; structuring accounts for 7.7 per cent and responding for only 5.5 per cent of the teacher's moves.

When the teacher's discourse is considered in terms of percentage of lines, the results for soliciting and reacting are slightly changed. While the analysis based on percentage of moves shows that the teacher solicited more than he reacted, there was in fact a larger proportion of lines devoted to reacting.

Percentage of lines of the teacher's discourse devoted to reacting is 44.7 per cent, while 28 per cent of the lines are accounted for by soliciting. This indicates that although a larger number of moves was devoted to soliciting, the length of reacting moves in terms of number of lines was generally greater. These differences, however, do not change the general picture of the teaching pattern: whether one considers percentage of lines or percentage of moves, the teacher's role is characterized by a high proportion of soliciting and reacting. Structuring moves with 20.1 per cent of lines spoken also assume a more significant role in the teacher's discourse than they did in terms of moves (7.7 per cent). In contrast with other moves, responding accounts for a very small percentage of the teacher's discourse -- only 6.8 per cent of the lines spoken.

The pupil's discourse (that is, moves and lines spoken by all pupils in 15 classes) is distinguished from the teacher's discourse by significantly different percentages of moves and lines devoted to the four pedagogical moves.

Pedagogical Move		Percentage of Pupil's Moves	Percentage of Pupil's Lines
Soliciting	SOL	11.3	8.7
Responding	RES	65.4	57.5
Structuring	STR	1.8	11.1
Reacting	REA	15.1	19.1
(Not Codable)	NOC	6.4	3.6

N (Moves) = 5,910
N (Lines) = 11,659

The pupil's primary job is to respond, as shown by the fact that the largest percentage of his moves (65.4 per cent) is devoted to responding. In marked contrast, smaller percentages of the pupil's discourse are given over to reacting (15.1 per cent) and soliciting (11.3 per cent). The pupil rarely structures; only 1.8 per cent of his moves is accounted for by structuring.

In terms of lines spoken by the pupil, the picture is little changed. Again the greatest percentage (57.5 per cent) is given over to responding, and considerably smaller percentages to reacting (19.1 per cent) and to soliciting (8.7 per cent). Structuring moves again account for a higher percentage of the discourse in terms of lines (11.1 per cent) than in terms of moves (1.8 per cent).

The data therefore reveal that the roles of the teacher and of the pupil are characterized by different percentages of their discourse devoted to the four pedagogical moves. Whereas 46.6 per cent of the teacher's moves are solicitations, only 11.3 per cent of the pupil's moves are included in this category. The reverse is the case when it comes to responding: 65.4 per cent of the pupil's moves are responding moves, while only 5.5 per cent of the teacher's moves are in this category. In contrast, 39.2 per cent of the teacher's moves are accounted for by reactions, but only 15.1 per cent of pupil moves are reactions. Structuring moves account for 7.7 per cent of the teacher's moves, but only 1.8 per cent of the pupil's moves are in this category.

SUMMARY

The teacher and the pupil play different but complementary roles in the classroom game. The teacher takes a much more active role than the pupil; he makes the majority of pedagogical moves and speaks the majority of lines. The roles of teacher and pupil as defined by frequency of behavior in the four categories of pedagogical moves are clearly different. The teacher speaks the overwhelming percentage of soliciting, reacting and structuring moves. The teacher's control of these three moves leaves the student with a very limited role to play in the classroom. The pupil's primary job is to respond to the teacher's solicitations, to a lesser extent to react and to solicit, and only on rare occasions to structure.

With the roles of teachers and pupils thus defined, the discussion turns in the following chapters to analysis of the functions of the pedagogical moves and the ways in which the teachers and the pupils carry out these functions in the classes studied.

CHAPTER THREE

THE SOLICITING AND RESPONDING MOVES

The core of classroom discourse is the response-expectant soliciting move followed by the expectancy-fulfilling responding move. This central soliciting-responding pattern is called the soliciting-responding act. This chapter presents the conceptual framework developed for the description of the soliciting-responding act, the system for analysis and the results of the analysis.

CONCEPTUAL FRAMEWORK

The question to be answered by empirical observation of the soliciting-responding act is "Does the person addressed by the solicitor present the expected responding move?" In order to answer this question, one must be able to answer two prior questions: "Who solicits whom?" and "What action is expected?"

The Soliciting Move

To observe soliciting is to observe (1) who solicits whom; (2) what the solicitor indicates he expects the other person to do; and (3) the manner in which the solicitor uses words to make his expectation known. The analysis of the soliciting move takes into account these three aspects of the move.

The speaker of the soliciting move in the classroom is either the teacher, a pupil, or some other person who is not a member of the class. The "what" of the soliciting move is considered to be those aspects that serve to specify the "restriction of reference" and is referred to as the indicative meaning of the move. The indicative meaning includes the solicitor's indication of the person who is expected to perform, dimensions of the activity to be performed, and the occasion (time and place) for the performance. The "how" of the soliciting move is considered to be the stylistic meaning of the move and includes dimensions of the speaker's manner of presenting the indicative meaning.

The Indicative Meaning. The meaning common to all soliciting moves is the functional meaning; that is, in each move the words and their structure indicate that the speaker is directing some person to perform some activity at some time. When one calls for the performance of an activity, he gives some indication of the limits within which he expects the performance to fall; the solicitor sets the limits for acceptable behavior. The limits are perhaps most obvious when the speaker commands a person to perform a physical act, for example, "Stop this talking this minute!"

The indicative meaning of the soliciting move is analyzed in terms of five major limiting elements of an activity: (1) the nature of the task and the type of behavior it requires; (2) the logical process activity, which indirectly provides clues about the range of possible answers; (3) the information process activity; (4) the occasion for the performance; and (5) clues regarding terms appropriate to the responding move. These dimensions reflect both the limits presented by the solicitor and the activity he directs the person to perform within the set of limits.

1. The Task. In the classroom there are two fundamental types of tasks which one may direct a person to perform: a substantive task and an instructional task. In calling for the performance of a substantive task, one directs the agent to deal with the knowledge that is the focus of study. In calling for the performance of an instructional task, one directs the agent to deal with matters related to the management and maintenance of the social context within which substantive knowledge is pursued.

In order to respond to a soliciting move, regardless of the type of task called for, the agent must perform some type of behavior. In the classroom there are two basic types of behavior: linguistic behavior and non-linguistic behavior. The solicitor indicates whether the agent is to perform a task that requires the use of language or to perform a task that requires the use of symbols or objects other than language. The type of behavior called for can, therefore, be described in terms of the objects one needs in order to perform the activity. These objects are classified in two broad categories: linguistic objects and non-linguistic objects.

In this sense, words as written marks and as spoken sounds are considered symbols that one uses to signify meaning. In other classrooms with different subject matter, the results of intellectual activity could be signified by symbols other than words, such as musical notes, color and line, movement, and the like. Words, then, are "physical entities serving as tokens of intellectual signification" (12:63). When the solicitor directs the agent to use words, he indicates whether language is to be used in oral or in non-oral form.

When the solicitor directs the agent to perform a substantive task, he requires the agent to use language. The agent is to present information in propositional form; for example, the solicitor may ask for a definition of trade, reasons for trade or data about imports and exports.

When the solicitor directs the agent to perform an instructional task, he may direct the agent to perform a linguistic act or a non-linguistic act. He may, for example, request information about an assignment or a test or he may direct the agent to close the door or to move a desk.

2. The Logical Process Activity. Indication of the logical process or extra-logical process that the agent is to use in responding is one of the principle means by which the solicitor specifies the limits within which an acceptable reply will fall.

When the solicitor calls for the performance of a substantive task, he implicitly indicates the logical process he expects the respondent to use in dealing with the substantive topic under discussion. Three types of logical processes are identified in the discourse: analytic processes (defining and interpreting), empirical processes (fact stating and explaining) and evaluative processes (opining and justifying).* For example, when a teacher asks, "What does 'trade' mean?" he is asking the respondent for a definition (analytic process). When a pupil asks, "Why does most trade take place between highly developed countries?" he is calling for an explanation (empirical process). When a teacher asks, "Why do you think the U.S. should increase its trade with the U.S.S.R.?" he is asking for justification of a point of view or opinion (evaluative process).

In contrast to substantive tasks which involve only logical processes, instructional tasks may involve either the logical processes indicated in the preceding paragraph, or extra-logical processes, such as performing, directing and repeating. The logical processes are applicable when the solicitor calls for information regarding instructional matters; for example, a pupil might ask the teacher to indicate what material will be covered in an examination, or the teacher might ask a pupil to explain why he hasn't completed his assignment on time. On the other hand, the extra-logical processes are applicable when the solicitor does not call for specific information about instructional matters, but (a) calls for the perfomance of a physical act, such as collecting papers or distributing tests; or (b) asks the agent to repeat something he previously has said; or (c) indicates that the agent is free to choose the information he will present. In the latter case, the solicitor directs the agent to speak (for example, "John?"

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* Analytic statements are statements about the proposed use of language; they are true by virtue of the meaning of the words of which they are composed. Empirical statements give information about the world, based on experience; the distinguishing mark of empirical statements is that they are verified by observation. Evaluative statements are statements that grade, praise, commend or criticize something; they are verified by reference to a set of criteria or principles of judgment. (See Appendix A, pages 200 to 205 for complete description of the logical processes.)

or "Any other comment?"), but does not specify what information the agent is to present; the information presented by the agent will, of course, have logical significance, but no specific logical process is expected by the solicitor.

3. The Information Process Activity. In addition to indicating the nature of the task, the type of behavior, and the logical process activity, the solicitor indicates the information process activity necessary for the performance of the expected responding move. This activity refers to the operation the agent is to perform with the information presented in the soliciting move.

The solicitor, for example, may direct the agent to assign a truth function to the information presented in the soliciting move. The soliciting move, "Do we need products from other countries?" is the meaningful equivalent of "X: we need products from other countries?". In this instance, "X" represents the truth function: "It is the case that..." or "It is not the case that...." Actually, the respondent replies by saying "Yes" or by saying "No," e.g., "Yes" = "It is the case that we need products from other countries." The information process involved here is referred to as assigning a truth function.

The solicitor may, on the other hand, present a series of alternatives and expect the respondent to select one or more of those alternatives, e.g., "Do we import more than one-half, one-half, or less than one-half of our consumer goods?" The respondent selects the appropriate information and presents it as the responding move. The information process involved here is selecting from stated alternatives.

As a third alternative, the solicitor may expect the agent to use the information in the soliciting move in constructing a responding move. To the soliciting move, "Why do we trade?" the respondent presents the following responding move, "We trade because we need goods and services." The respondent assumes as true what the solicitor says and extends its propositional meaning by presenting information of the logical significance expected; that is, he assumes we trade and offers an explanation as to why we trade. The solicitor may also expect the agent to construct a responding move by converting a command for action into action. The information process involved here is constructing a response.

In some cases the solicitor indicates that he expects the agent both to assign a truth function for and to extend the information in the soliciting move. The process in such instances is described as assigning/constructing. When the teacher, for example, says "Do you have a question?" he expects not only a "Yes" or "No," he also expects the pupil to continue by giving the question if the answer is "Yes." In practice, the respondent frequently constructs his move and thereby implies the truth function, i.e., he asks his question without saying "Yes."

Finally, the solicitor may present alternatives, yet be ambiguous as to whether he expects the respondent to select from the alternatives or to assign a truth function to the stated alternatives. The teacher could say "Shall we trade or fade?" and the pupil says, "Yes," indicating that the stated alternatives are all inclusive, that is, "It is true that we shall trade or fade."

4. Occasion for the Expected Responding Move. The concepts of time and place are useful in analyzing the meaning of directives. By varying the precision with which one indicates when and where an agent is expected to perform, one can significantly limit the actions an agent may perform. The indication of the time and the place for the expected performance is considered as an indication of the occasion for the anticipated responding move.

5. Clues Regarding Terms. The complete or propositional meaning of the soliciting act can be determined only when one combines the content meaning of the soliciting move and the content meaning of the responding move it elicits (4:354). The soliciting move, "Why do we trade?" and the responding move, "Because we need certain goods and services," when combined yield the statement, "We trade because we need certain goods and services." A common topic serves as the base for the relation of the content in the two moves. When the speaker presents the soliciting move, the linguistic structure of the words he uses tends to emphasize certain terms that may be considered key terms. These key terms may be used to identify the topic of the soliciting move.

If the solicitor expects the respondent to present additional information about the topic, he implicitly indicates the logical significance of that information, as previously discussed. He may also provide special clues regarding terms appropriate to the responding move. In the soliciting move, "Why do we trade?" the solicitor presents a propositional function; that is, when the respondent replaces the information placeholder "why" with specific information, one may determine the propositional meaning of the soliciting-responding act. While the specific meaning of a propositional function, such as why, what, when, where, how and who, depends upon its use in a given move, the propositional functions when given meaning in context tend to specify the type of information appropriate to the responding move.

The solicitor may offer more direct clues to the terms by citing terms which he expects the agent to use or by citing terms that he expects the agent to exclude from the responding move. He may, for example, cite terms by saying, "Tell me why nations trade and state your reply in terms of the three factors of production." He could exclude terms by saying, "What state is the largest producer of consumer goods? Don't tell me New York or Connecticut." By referring to information previously admitted to the discourse, the solicitor could cite terms that parallel in essential characteristics those that he expects in the responding move, for example, "What other minerals, in addition to bauxite, do we import?"

Finally, when the information process is assigning a truth function, the solicitor may explicitly suggest the truth value he expects by providing leading expressions, for example, "You do think we ought to increase our exports, don't you?"

The Stylistic Meaning. The stylistic meaning of a soliciting move refers to the speaker's manner of presenting the indicative meaning; that is, "how" the solicitor makes his expectation known. In observing the stylistic meaning of the move, one is interested in describing aspects of the form or structure of this functional unit of speech in order to determine if usage gives rise to specific forms related to the nature of the activity called for.

Authors of textbooks on teaching methods sometimes discuss the form or style that questions in the classroom ought to have. Underlying this concern is apparently the assumption that teachers do ask "questions" and that the asking of questions is or should be useful for accomplishing educational objectives. This assumption has frequently led to prescriptive statements; the most often noted prescriptions can be summarized as follows: (1) keep them brief and make them specific and (2) present problems and do not overstructure (7:99). Evidence to support either of these prescriptions is generally lacking. One is in doubt about the relation between the form of speech units, as an element of stylistic meaning, and the anticipated and/or unanticipated outcomes of the teaching process

In this study it is assumed that form communicates a type of meaning and that form can vary as a function of other elements of meaning in the soliciting move. In short, variations in form are meaningful. The purpose at this stage of inquiry is to establish concepts adequate for description. One may begin by attempting to observe those aspects of method most frequently mentioned in prescriptive statements; namely, length, mode, composition and construction.

In observing the stylistic meaning of the soliciting move, one is concerned, therefore, with the following questions: (1) What is the length of the teacher's moves and of the pupil's move? (2) Is the length of a move related to the task solicited? (3) How are soliciting moves presented -- as interrogatives, commands or statements? (4) How many and what types of activities do teachers and pupils call for in a move?

By using a standard length of line when typing the protocols of classroom discourse, one is able to determine the amount of discourse spoken by the teacher and by the pupils and also the amount of discourse devoted by each speaker to each of the pedagogical moves. With the identification of the speaker and the task of each soliciting move, one can relate speaker, task and length of move to determine the differences between teacher and/or pupil substantive moves and teacher and/or pupil instructional moves.

Since the soliciting move is a functional unit of speech, it is not presented exclusively in any one grammatical mood; that is, not all "questions" function as directives and not all directives are "questions." It may be the intention of the speaker that the agent consider the directive as an inquiry. On the other hand, he may intend that it be taken as a command. How the speaker intends the directive to be taken is described as being the mode of the presentation. The mode of the move may vary for the teacher and the pupil and for substantive and instructional tasks.

When one solicits, he may call for the performance of one or more tasks. In the framework of this analysis, one may call for the performance of one substantive task or two substantive tasks; one instructional task or two instructional tasks; or one substantive task and one instructional task. The type and number of tasks called for are analyzed in terms of the combination of primary activities the solicitor directs the agent to perform; namely, the logical process activity and the information operation. This aspect of the stylistic meaning of the move is referred to as the composition of the move.

Relationships of Soliciting and Responding Moves

The concept of the soliciting-responding act combines the functional meaning of the soliciting move and the functional meaning of the responding move. In the soliciting move the solicitor intends to elicit a subsequent act. Through the indicative meaning of the move, the solicitor specifies the limitations within which the agent addressed is expected to perform the subsequent act. The soliciting move is, therefore, the initiatory response-expectant move. In the responding move, on the other hand, the respondent attempts to fulfill the expectation specified by the solicitor; the responding move is reflexive in nature and bears a reciprocal relation to the soliciting move.

When the soliciting move does in fact elicit a responding move, that is, when the intent is fulfilled, the soliciting move has both intentional meaning and consequential meaning. The solicitor both intends to elicit and does elicit subsequent action. When the soliciting move does not elicit the intended response, the move has only intentional meaning.

The responding move, in like manner, has both intrinsic meaning and relational meaning. What the respondent says has intrinsic meaning as a unit of speech that makes some contribution to the discourse. In this sense, the move may or may not fulfill the complete expectation of the soliciting move which elicited it. What the respondent says has relational meaning to the extent that his move reflects the expectation of the solicitor.

In the analysis of the soliciting move and of the responding move as separate moves, one is concerned with the intentional meaning of the soliciting move and with the intrinsic meaning of the responding move. In analyzing the intentional meaning of the solicitation, one asks, "What action does the solicitor intend to elicit?" In analyzing the intrinsic meaning of the responding move, one asks, "What does the respondent say?"

In the analysis of the relationships of the soliciting move and the responding move in the soliciting-responding act, one is interested in the consequential meaning of the soliciting move and the relational meaning of the responding move; that is, in the relation between the intended response and actual response. In analyzing the consequential nature of the solicitation, one asks, "Does the soliciting move elicit the intended response?" In analyzing the relational meaning of the responding move, one asks, "How does what the respondent says relate to what the solicitor intended to elicit?" In this research, the analysis of the soliciting-responding act is in terms of the relational meaning of the response -- that is, to what extent does the responding move reflect the intentional meaning of the soliciting move?

SYSTEM FOR ANALYSIS

The concepts used in the analysis are presented in three parts of this section and in a fourth part results of the reliability test of the system are reported. Part One presents the categories used to identify the speakers involved in the soliciting act: the solicitor and the agent addressed. Part Two presents categories used to describe the indicative meaning of the soliciting move. Part Three presents the categories used for describing the stylistic meaning of the move.

Part One: Persons Involved in the Soliciting-Responding Act

The soliciting move is the initiatory maneuver in an anticipated interaction. The persons involved in the interaction are the solicitor and the agent addressed by the solicitor.

1. The Solicitor. The solicitor is the person who presents the oral directive to another person in order to elicit a responding move.

    1.1 The Teacher
    1.2 A Pupil
    1.3 Any Other Speaker

2. The Agent Solicited. The agent is the person(s) addressed by the solicitor. He is expected to perform the activity specified by the solicitor.

   2.1 The Teacher
   2.2 All Pupils
   2.3 Any One Pupil
   2.4 One Specified Pupil. (One pupil is named before expectation is made known.)
   2.5 One Selected Pupil. (Expectation made known, then pupil selected as agent.)

Part Two: The Indicative Meaning of the Soliciting Move

The indicative meaning of the soliciting move includes the solicitor's indication of (l) the nature of the performance in terms of the pedagogical task expected and the type of behavior expected, (2) the primary activities he directs the agent to perform, and (3) the clues he gives the agent regarding the terms in which an acceptable responding move is to be phrased.

1. The Pedagogical Task. In the classroom there are two basic types of tasks: the substantive task and the instructional task. The solicitor indicates the task or tasks he expects the agent to perform.

   1.1 The Substantive Task. If the solicitor directs the agent to perform a task that requires the agent to deal with the subject matter under study, then he directs the agent to perform a substantive task.

   Examples

   T/SOL: Why are imports to the U.S. so important?

   T/SOL: What has happened to our foreign investments in the last fifteen years?

   1.2 The Instructional Task. If the solicitor directs the agent to perform a task that requires the agent to tend to some aspect of the management of the classroom or social context within which the subject matter is pursued, then he directs the agent to perform an instructional task.

Examples

T/SOL: Joyce, listen instead of talking.

T/SOL: Which shall I give you first, the assignment or the test?

2. The Type of Behavior Expected. Two categories are established for the description of the types of behavior called for: linguistic and non-linguistic.

Even though this conceptualization is an important element of the system, coding of this aspect of the soliciting move does not require a separate set of categories. The data are derived from the categories used for description of the logical process activity.

3. The Primary Activities. The two primary activities are (a) the logical process activity to be used in dealing with the information solicited or extra-logical process activity in which the solicitor calls for the completion of a physical act and (b) the information process activity which refers to the solicitor's indication of how he expects the agent to use the information presented in the soliciting move.

3.1 The Logical Process Activity. The logical process activity called for in the soliciting move component will be one of the following logical modes: the analytic mode, the empirical mode, the evaluative mode, and the extra-logical mode.

For those logical processes included in the original analysis system, complete definitions are given in Appendix A.

3.11 The Analytic Mode

3.111 Defining
3.112 Interpreting

3.12 The Empirical Mode

3.121 Fact Stating
3.122 Explaining

3.13 The Evaluative Mode

3.131 Opining
3.132 Justifying

3.14 The Extra-Logical Mode. The solicitor does not call for verifiable information but calls for the completion of a physical act that can be observed but not verified; or the solicitor indicates that the agent is free to choose the information he will present. In the latter case, the information presented by the agent will have logical significance, but no specific logical meaning is expected by the solicitor.

3.141 Perform Oral. To perform orally is to speak. The solicitor directs the agent to speak, but does not specify the information the agent is to present.

Example

T/SOL:	Any other comment? (Indicates that the agent is free to choose logical process.)
P/SOL:	How much coffee does the U.S. actually import? (Agent chooses to solicit a fact.)

3.142 Language Performance: Non-Oral. To perform with language in a non-oral form is to read, write, hear or think, but not to speak.

Examples

T/SOL:	Please turn to page 21 and look at that chart for a few minutes. (Solicitor directs agent to read.)
T/SOL:	Put that down in your notes. (Solicitor directs agent to write.)

3.143 Non-Language Performance. To perform without language is to complete a physical act which does not involve writing, reading, speaking, cogitating or listening.

Examples

T/SOL:	Pass in your books.
T/SOL:	All right, class, settle down back there.

3.144 Directing. To direct is to seek direction from the agent without indicating whether the agent is to give directions as a statement of fact or as as an opinion as to what ought to be done in a given situation. In the directive itself, there is no indication of a specific object to be evaluated. The solicitor does not indicate the logical process activity expected.

Examples

T/SOL: What ought we do today?

T/SOL: How shall we handle this problem?

P/SOL: How do we go about our debates?

P/SOL: Ask him!

3.145 Repeating. To repeat is to restate some vocal action that has already been entered into the discourse. A solicitation that requests a repetition does not solicit information, but solicits the act of "repeating."

Examples

T/SOL: Pardon?

T/SOL: Repeat that so John can hear you.

3.15 Logical Process Unclear. The logical process is unclear when the wording of the move or the meaning of the move is ambiguous.

Example

T/SOL: You spent the money in America, but the salesman /missed/, would he?

3.2 The Information Process Activity. The information process activity refers to the solicitor's indication of how he expects the agent to use the information presented in the soliciting move in responding as directed.

3.21 Assigning A Truth Function (A). The solicitor directs the agent to assign a truth function if he directs the agent to affirm, to accept, to agree with or to negate, to deny or to disagree with infomation presented in the soliciting move. The solicitor indicates that a sufficient response to the solicitation is either a "Yes" or a "No," which means "It is the case that..." or "It is not the case that...."

Examples

P/SOL:	Is that a machine tool?
T/SOL:	Do we operate under a high tariff system today?
T/SOL:	Is trading in both cases based on the same principle?
P/SOL:	Are the figures recent?

3.22 Selecting (S). The solicitor directs the agent to select one or more alternatives if he presents two or more alternatives and indicates that a sufficient response is, or represents, the choice of one or more of the alternatives presented. The exclusive disjunction must be stated or clearly implied.

Examples

T/SOL:	Now, portfolio investments are mostly long term or short term?
T/SOL:	Is it a matter of dealing between people or is it a matter of dealing between governments?
T/SOL:	Do we find the greatest flow of trade between developed and underdeveloped countries, between two underdeveloped countries or do we find the greatest flow of trade between two developed countries?

3.23 Constructing (C). The solicitor directs the agent to construct a response if he does not present alternatives for the agent to choose among, does not direct the agent to assign a truth function for information presented in the soliciting move, but does direct the agent to extend the information presented in the soliciting move as the basis for a response. All commands, most directives involving non-linguistic behavior and most directives with information-placeholders require the construction of a response.

Examples

T/SOL: Differentiate between domestic and international trade.

T/SOL: Most trade is carried on through the medium of what?

T/SOL: Put the newspapers away!

3.24 Constructing/Assigning (C/A). The solicitor directs the agent both to assign a truth function to information presented and to construct an additional aspect of the response, if the solicitor indicates that providing a truth function, either explicitly or implicitly, is appropriate but not sufficient as a response.

Examples

T/SOL: Any questions now about these general directions?

T/SOL: Does anyone have a good definition of trade?

3.25 Selecting/Assigning (S/A). If the solicitor indicates that the agent is to assign a truth function to a set of alternatives to indicate that the alternatives are mutually exclusive or the set is sufficiently inclusive or if the agent is ambiguous as to whether the agent is to assign a truth function to the set or is to select an alternative, he directs the agent to select an alternative or to assign a truth function for alternatives.

Examples

T/SOL: Do you think we ought to lower our tariffs or forget world trade?
P/RES: Yes

4. Clues Regarding Appropriate Terms. The solicitor may indicate that the responding move is to be stated or is not to be stated in terms of specific substantive concepts; he may refer to previous statements admitted in the discourse and direct the agent to provide information that parallels in essential detail that other information; or he may provide clues indicating whether the agent is to affirm or negate information presented in the solicitation. He may also use an information placeholder, or propositional function, that gives a clue about the range of alternatives or type of information appropriate for a response. By referring to the terms of the response in one or more of these ways, the solicitor provides clues to the agent that may be useful in responding to the directive.

4.1 Terms Cited. The solicitor cites terms when he indicates to the agent that the response is to be phrased in specific terms.

Example

T/SOL: Now, tell me why there is trade. Try to answer in terms of factors of production.
P/RES: Because countries don't have the same natural resources.

4.2 Terms Excluded. The solicitor excludes terms when he indicates to the agent that certain concepts are not to be used in constructing a response to the directive.

Examples

T/SOL: Aside from natural resources, why do countries trade?
P/RES: Some countries don't have the kind of workers they need.

T/SOL: What states have very little manufacturing? Don't tell me New York.
P/RES: Arizona.

4.3 Terms of a Parallel Nature. The solicitor calls for terms of a parallel nature when he indicates that the response is to be similar in essential detail to the information previously presented in the discourse. Frequently, the solicitor directs the agent to use terms that parallel those already used or to make an observation about a phenomenon similar to one already made. The clue to parallelism is usually "some other," "another," or "something else."

Examples

T/SOL: Now give me another reason why we have some raw materials being traded.

T/SOL: How else might one invest American capital abroad?

4.4 Leading. The solicitor provides a leading clue when he directs the agent to assign a truth function and provides a suggestion as to the specific response acceptable to or expected by the solicitor. Examples of leading clues are: "don't we," "isn't it," and "shouldn't we."

Examples

T/SOL: We import great quantities of tin, don't we?
P/RES: Yes.

T/SOL: We ought to join the Common Market in order to keep up our markets, shouldn't we?
P/RES: I guess so.

4.5 Propositional Functions. Propositional functions are words used in soliciting moves as placeholders for the information the agent is directed to present. Since usage determines the specific meaning of a word, a propositional function does not have a unique meaning, but it does have a limited range of meanings that serve as clues to the agent.

1. What	What is tin?
2. What about, how about	What about Red China? How about natural resources?
3. What type of, sort of, kind of	What kind of material do we import? What sort of products does Ghana sell? What kind of trade do we specialize in?
4. How, in what manner-way	How do banks enter into the problem? In what way does a country put a tariff on?

5.	Why, for what purpose-cause-reason, what is the purpose-cause-reason	Why do nations trade? What's the purpose of the investment, aside from making profits?
6.	Who, whom	Who was greatly interested in infant industries? Who makes the machines that make the machines? The tariff is put on to protect whom?
7.	When, at what time	When were you in Canada?
8.	Where, at what place	Where else, besides Africa, are diamonds found? Where do you have the greatest trade occurring?
9.	How much-many, to what degree-extent, how X	The difference between our imports and exports is about how much? How many people are unemployed in the U.S. today? How effective was the shark repellent?
10.	Which What X	Which country is the grey country? What country in the world has the highest capital investment?
	Preposition-what-X	The majority of our tin comes from what country?
	Whose X What is the X that...	Whose business does it protect? What is the country that has a marked difference in its economic system?

5. The Occasion for the Solicited Performance. The solicitor indicates when and where he expects the agent to perform the activity. The solicitor may indicate that the action is to be performed immediately or at some future time; he may indicate that he expects action within the classroom or at some other place. (Since the meanings of the terms are self-evident, the definitions developed for coders are not given here.)

5.1 Immediate and Within the Classroom

5.2 Immediate and Outside the Classroom

5.3 Future of This Class Session: Within Classroom

5.4 Future Class Session: Within Classroom

5.5 Future Study Unit: Within Classroom

5.6 Future After Class and Outside Classroom

5.7 Future-Unspecified: Within Classroom

5.8 Future-Unspecified: Outside Classroom

Part Three: The Stylistic Meaning of the Soliciting Move

Stylistic meaning refers to the speaker's manner of presenting the indicative meaning; that is, "how" the solicitor makes his expectation known. The stylistic meaning of the soliciting move includes the length of the presentation in terms of the number of lines, the mode in which the directive is presented, the composition of the move in terms of the number and combination of tasks and primary activities presented, and the construction of the move.

1. The Length of the Presentation. The length of the presentation is determined by the number of lines of typescript included in the move. Standard line is a 4.5 inch segment of the typescript.

2. Mode of Presentation. Mode of presentation refers to grammatical concepts of purpose-mood of the soliciting move. The grammatical concepts have been adapted to the pedagogical context under study.

2.1 The Imperative Mode. The mode of presentation is imperative if the solicitor presents the solicitation as a command that is to be obeyed. Imperatives usually begin with an action word, but may begin with a word that refers to the solicitor (I) or with the indication of the agent

Examples

T/SOL: Make a generalization based on these two figures.

T/SOL: I want you to stop this talking immediately.

T/SOL: So put that down in your notes.

2.2 The Interrogative Mode. The mode of presentation is interrogative if the solicitor presents the solicitation as an inquiry to which the agent is to respond. The response is "sought after," but not "demanded." Interrogatives are not propositions, but are often quasi-statements in which a propositional function is to be replaced or for which a truth function is to be determined.

Examples

T/SOL: What would be another argument in favor of trade barriers?

T/SOL: Isn't that a variation?

T/SOL: Our production went up about how much?

2.3 The Declarative Mode. The mode of presentation is declarative if the solicitor presents the solicitation as a complete assertion or as a partial assertion to be completed by the agent. The assertion or partial assertion is a solicitation because in the pedagogical context it serves to elicit a response from the agent. In the partial assertion, the solicitor's pause in speech indicates to the agent that he is to complete the assertion.

Examples

T/SOL: It can also be due to factors that we haven't mentioned at all.

T/SOL: Two of the biggest things that we import in this country we do produce ourselves.

T/SOL: Of course, we discussed the great exception to this rule yesterday.

3. Construction of the Move.

3.1 Elliptical. A solicitation is elliptical when words necessary for comprehending what performance is called for or for comprehending what information is to be used in responding to the directive are not stated, even though such information may be understood by the agent from the context in which the directive is spoken. There are two types of elliptical directives:

Type 1 -- solicitations that include only the agent and the general nature of the expected response, such as "Yes?" and/or a proper name; and Type 2 -- solicitations containing something other than "Yes?" and/or a proper name.

Examples

T/SOL: Yes? (Type 1)
P/SOL: Don't you think we ought to lower our tariffs?

T/SOL: Why? (Type 2)
P/RES: Because we don't use that much cobalt in a year.

3.2 Conditional. A solicitation is conditional when the solicitor indicates that the agent is to consider the information presented in the solicitation as providing the antecedent of a hypothetical or a specified state of affairs, as distinct from an unspecified or general state of affairs. Since the conditional is not limited to the hypothetical, logical process activities other than explaining may be indicated.

Examples

T/SOL: If we were to trade with Red China, what products would we exchange?
P/RES: Probably rice and machines.

T/SOL: Assuming all countries had the same factors of production, what would be the case?
P/RES: There wouldn't be any trade.

3.3 Completion. A solicitation is completion in form when the solicitor inverts the solicitation, placing the propositional function at the end of the solicitation; or when the solicitor does not ask either for a truth function or for a propositional function and pauses to indicate that the agent is to provide the information necessary for the completion of the information presented in the solicitation.

Examples

T/SOL: Now, for example, when Roosevelt was President he initiated a program for the relief of what?

T/SOL: The greater demand will be issued for those products, thus creating a higher...
P/RES: Income for the people who make them.

T/SOL: And finally one other very important factor in production today and that is the role of...
P/RES: The government.

3.4 Interlarded Information. A solicitation contains interlarded information when the mode of presentation is interrogative or imperative and additional information is presented in the declarative mode. Usually this information is related to the expected performance, but occasionally it is not.

Examples

T/SOL: Is there anyone who doesn't have a book with him? I thought we had enough to go around.

T/SOL: What is the term that we use, America's program for its investment in a foreign country or towards its exports with a foreign country? It's just a nice catchall term that we use.

4. The Composition of the Move. The composition of the move is described in terms of the number and the various combinations of logical activities and information activities called for in the solicitation. (See Appendix B, pages 223-225).

Summary of the Coding System

I. THE PERSONS INVOLVED IN THE SOLICITING ACT

A. The Solicitor: speaker of the response-expectant directive
   1. The Teacher: person legally responsible for teaching process
   2. The Pupil: person enrolled in a teacher's class
   3. Other: any person other than teacher or pupil

B. The Agent: person(s) directed to perform indicated activity
   1. The Teacher
   2. A Pupil or Some Pupils
   3. All Pupils

II. THE INDICATIVE MEANING OF THE SOLICITING MOVE: THE ACTIVITIES THE SOLICITOR DIRECTS AN AGENT TO PERFORM

A. Pedagogical Task: related to subject matter knowledge or management of social context
  1. Substantive: subject matter under study
  2. Instructional: managerial aspects of classroom process

B. Type of Behavior: limits regarding entities with which agent may perform
  1. Linguistic: use of language expected
  2. Non-Linguistic: use of entities other than language expected

C. The Primary Activities: cognitive processes involved in performance
  1. Logical Process Activity
    a. Analytic Process: proposed use of language or rules of logic
      (1) Defining (DEF): essential characteristics and/or object referents of term
      (2) Interpreting (INT): verbal equivalent of word group
    b. Empirical Process: sense experience as criterion of truth
      (1) Fact Stating (FAC): what is, was, or will be, without relating or evaluation
      (2) Explaining (XPL): observed relationships between objects, events, principles
    c. Evaluative Process: set of criteria or value system as basis for verification
      (1) Opining (OPN): judgments or policy statement
      (2) Justifying (JUS): reasons or arguments to support opinions
    d. Extra-Logical Process
      (1) Repeating (RPT): the act of repeating a vocal activity
      (2) Directing (DIR): the act of seeking directions
      (3) Performing (PRF): the act of performing an instructional task
    e. Logical Process Unclear: process called for unclear to coder
  2. Information Process Activity: use of information presented by solicitor
    a. Assigning A Truth Function (A): provide truth function for information presented

- b. Selecting From Stated Alternatives (S): choose one or more of explicit alternatives
- c. Constructing (C): extend information presented
- d. Constructing/Assigning (C/A): provide truth function and/or extend information
- e. Selecting/Assigning (S/A): provide truth function for alternatives and/or select alternative(s)

D. Clues Regarding Appropriate Terms: indication of evidence appropriate to the expected response
  1. Using Cited Terms (C): terms related to specific concepts presented by solicitor
  2. Omitting Excluded Terms (X): terms other than those related to concepts mentioned by solicitor
  3. Using Parallel Terms (P): terms similar in essential details to those previously presented
  4. Following Lead Provided (L): assign truth function explicitly suggested by solicitor
  5. Replacing Propositional Function (F): terms equivalent to an information place-holder

E. Occasion for the Performance: the time and place for the responding move
  1. Time - Immediate: following the soliciting move
    - a. Place - In Class
    - b. Place - Out of Class
  2. Time - Future: not directly following the soliciting move
    - a. Place - In Class
      - (1) This Session: during the present class period
      - (2) Other Session of Unit: one of the four class periods of unit, but not present one
      - (3) Sessions After This Unit: some class period after the four periods devoted to special unit
    - b. Place - Out of Class
      - (1) After Class Session: some time prior to a session devoted to special unit
      - (2) Unspecified: some time prior to a class session that is unspecified

III. THE STYLISTIC MEANING OF THE SOLICITING MOVE: THE MANNER OF PRESENTING THE MOVE

A. The Length of the Presentation: number of lines of protocol

B. The Mode of Presentation: how the directive is intended to be taken
    1. Imperative: as a command to be obeyed
    2. Interrogative: as an inquiry or request
    3. Declarative: as a suggestion to be acted upon

C. The Construction of the Move
    1. Elliptical: partial meaning to be inferred from context
    2. Conditional: information to be considered as applicable to specified context
    3. Incomplete: syntax indicates incomplete meaning
    4. Interlarded: information included in directive

D. The Composition of the Move: number and type of activities called for
    1. The Number and Type of Logical Process Activities
    2. The Number and Type of Information Operation Activities

Reliability Test

Preliminary studies conducted during the development of the analysis system indicated consistently high agreement among coders. Nevertheless, it was necessary to obtain under controlled conditions a quantitative measure of the coding reliability for each of the dimensions of meaning observed in the soliciting moves.

Three members of the research staff participated in the reliability test. Five classes were selected at random from the complete list of 15 classes. From the five classes, two sessions were selected from each, yielding a total of 10 randomly selected class sessions. Randomly selected groups of moves from the beginning, the middle and the end of the 10 class sessions were identified in order to establish a balanced sample of over five per cent of the 5,135 soliciting moves.

The three coders were divided into teams, one of which consisted of two coders and the other of a single coder. Assignment of coders to teams was rotated so that all possible permutations of pairs and singles were compared. Following the procedure for the coding of all other protocols, one member of the pair coded a given sample; the other member reviewed the coding; then both members of the pair arbitrated any disagreements. The single coder, coded the sample and reviewed his own coding.

After each of the ten samples had been coded independently by the two teams, the codings were compared and the percentage of agreement among coders for each dimension of meaning was computed. As shown in Table 1, the overall agreement among coders is 97.1 per cent and the range is from 92.8 per cent to 100.0 per cent.

RESULTS OF ANALYSIS

This section presents a description of the soliciting and responding moves in the classes studied, For the most part, the data are summarized for all classes combined over the four sessions to provide a comprehensive view of the soliciting and responding moves in the discourse. In some instances, data are presented for each of the classes, for purposes of comparison among the classes.

Role of the Soliciting Move in the Discourse

The soliciting move accounts for about one-third of all moves spoken in the 15 classes. The median percentage for all classes is 32.5 per cent, with a high of 39.8 in Class 3 and a low of 29.2 in Class 12.

One might expect the 345 pupils to solicit more often than the 15 teachers solicit. One of the rules of the teaching game, however, is that the teacher is the chief solicitor: the teacher speaks 86.9 per cent of all soliciting moves in the 15 classes.

Differences in roles of the teacher and the pupil are apparent when the percentage of the teacher's discourse and the percentage of the pupil's discourse devoted to soliciting are considered. The data summarized in Table 2 clearly demonstrate that the soliciting move plays a more prominent role in the teacher's discourse than it does in the pupil's discourse. Soliciting moves account for 46.6 per cent of the teacher's moves, but only 11.3 per cent of the pupil's moves. The picture is approximately the same when these data are considered in terms of percentage of lines: whereas 28.0 per cent of all lines spoken by the teacher involve soliciting, only 8.7 per cent of the lines by the pupil involve soliciting.

The Component

The analysis of the soliciting move is in terms of the components of the move. A component includes one task (substantive or instructional) and one set of primary activities (logical process activity and information process activity). The 5,135 soliciting moves are the equivalent of 5,377 soliciting move components, of which the teacher speaks 4,695 and the pupil speaks 682. The larger

TABLE 1

PERCENT OF AGREEMENT AMONG CODING TEAMS IN CONTENT ANALYSIS OF SOLICITING COMPONENTS

Category	Per Cent of Agreement
Total	97.1
Persons Involved	
Speaker	99.2
Agent*	93.6
Indicative Meaning	
Pedagogical Task	100.0
Type of Behavior	100.0
Primary Activities	
Logical Processes	98.4
Information Processes	98.0
Clues Regarding Terms	
Citing	100.0
Excluding	100.0
Parallel	98.4
Leading	98.4
Propositional Function	97.2
Occasion	100.0
Stylistic Meaning	
Length of Unit	97.2
Mode	97.6
Construction	92.8
Composition	96.8

* This category presents the identification of the teacher or pupil and the four different methods of designating a pupil. Errors reflect methods of designating pupils, not the identification of agent per se.

TABLE 2

PERCENTAGE OF THE TEACHERS' AND PUPILS' MOVES AND LINES DEVOTED TO SOLICITING FOR EACH OF THE FIFTEEN CLASSES AND FOR ALL CLASSES COMBINED

Class	Teacher		Pupil	
	Moves	Lines	Moves	Lines
All Combined	46.6	28.0	11.3	8.7
1	49.0	34.8	4.1	4.6
2	51.3	34.2	6.5	4.2
3	55.7	42.7	9.1	6.9
4	48.4	34.1	7.9	4.5
5	42.4	26.1	22.6	14.1
6	51.9	24.4	7.5	6.2
7	40.4	21.5	18.5	15.0
8	44.8	27.9	12.2	10.7
9	40.5	13.9	5.4	4.7
10	45.5	14.7	8.3	6.5
11	49.4	31.6	7.8	3.4
12	36.7	16.7	18.7	14.9
13	51.4	40.7	10.4	10.4
14	44.7	32.9	8.1	6.3
15	42.5	24.2	17.6	13.1

number of components reflects the fact that 242 soliciting moves are two-component moves. In other words, 96.3 per cent of all soliciting moves call for a single task, which is related either to the subject matter or to instructional matters; only 4.7 per cent call for two different tasks, whether substantive and/or instructional.

The Solicitor and the Task

The fundamental limiting factor presented to the agent by the solicitor is the indication of the task to be performed. The task may either be a substantive one, related directly to the subject matter under study, or an instructional one, related to the social-managerial aspects of the classroom. Table 3 presents the distribution of the soliciting components in terms of solicitor and the task the solicitor expects the agent to perform.

In general, the speaker of the soliciting component is more likely to be a teacher than a pupil, and the task called for by the solicitor is more likely to be substantive than instructional. The teacher is the speaker of 87.3 per cent of all soliciting move components and the pupil is the speaker of only 12.7 per cent. Both the teacher and the pupil more often solicit the performance of a substantive task than they solicit the performance of an instructional task. In 62 per cent of the 5,377 components the solicitor indicates that he expects the agent to perform a substantive task, while in 38 per cent he expects the performance of an instructional task. In only two of the 15 classes do the solicitors expect more instructional than substantive tasks, and in these two classes they expect at least 44 per cent of the performances to be substantive in nature.

In order of observed frequency, the distribution for speaker and task is teacher-substantive, teacher-instructional, pupil-substantive and pupil-instructional. Teacher-substantive task components represent 53.7 per cent of all soliciting components, and teacher-instructional task components account for 33.6 per cent of all soliciting components. Pupil-substantive task components account for 8.3 per cent of all soliciting components, and pupil-instructional task components represent 4.4 per cent of all soliciting components. This distribution is altered somewhat in Classes 3 and 5, in which teacher-instructional components as a percentage of all components is greater than the percentage observed for teacher-substantive components. In three classes (4, 11 and 14) the percentage of pupil-instructional components is greater than the percentage of pupil-substantive components, but in these instances the difference is not more than two percentage points. It is accurate to say, therefore, that the combination of speaker and task observed for all classes combined is also representative of the individual classes.

TABLE 3

DISTRIBUTION OF SOLICITING COMPONENTS BY SPEAKER AND SPEAKER-TASK FOR EACH OF THE FIFTEEN CLASSES AND FOR ALL CLASSES COMBINED

Class	Total	Teacher			Pupil		
		Total	Substantive	Instructional	Total	Substantive	Instructional
All Combined	100.0	87.3	53.7	33.6	12.7	8.3	4.4
1	100.0	95.0	66.7	28.3	5.0	3.3	1.7
2	100.0	92.3	53.5	38.8	7.7	4.0	3.7
3	100.0	92.5	39.9	52.6	7.5	3.9	3.6
4	100.0	91.0	52.7	38.3	9.0	3.3	5.7
5	100.0	73.6	26.5	47.1	26.4	20.1	6.3
6	100.0	93.3	65.0	28.3	6.7	5.1	1.6
7	100.0	79.8	50.0	29.8	20.2	14.4	5.8
8	100.0	86.0	55.4	30.6	14.0	11.2	2.8
9	100.0	95.6	78.5	17.1	4.4	3.8	0.6
10	100.0	90.4	69.7	20.7	9.6	8.1	1.5
11	100.0	93.1	65.5	27.6	6.9	2.8	4.1
12	100.0	73.1	40.5	32.6	26.9	16.9	10.0
13	100.0	88.1	54.3	33.8	11.9	7.2	4.7
14	100.0	92.3	61.0	31.3	7.7	2.9	4.8
15	100.0	77.8	43.4	34.4	22.2	15.5	6.7

In analyzing the soliciting components of the 15 classes in terms of speaker and task, one finds that teacher-substantive components constitute a relatively high per cent of all components and exhibit fairly wide variation from class to class. The teachers tend to monopolize the use of the soliciting components, but vary in the extent to which they expect the performance of a substantive rather than an instructional task. Pupil-instructional components, on the other hand, constitute a relatively small number of all soliciting components and show little variation from class to class. Classes vary somewhat more in the extent to which pupils solicit the performance of substantive tasks.

The median for the teacher-substantive components as a percentage of all soliciting components is 54.3 per cent. The range is 52 percentage points, from a high of 78.5 per cent in Class 9 to a low of 26.5 per cent in Class 5. In only four classes do teacher-substantive components account for less than 50 per cent of all components.

The median for the teacher-instructional task components as a percentage of all components is 31.3 per cent. The range is 35.5 percentage points, from a high of 52.6 per cent in Class 3 to a low of 17.1 per cent in Class 9. It is the exceptional teacher who speaks more instructional task than substantive task components.

The median for pupil-substantive task components as a percentage of all components is 5.1 per cent and the range is 17.3 percentage points, from a high of 20.1 per cent in Class 5 to a low of 2.8 per cent in Class 11.

For the pupil-instructional components as a percentage of all components, the median for the 15 classes is 4.1 per cent. The range of 9.4 points, from a high of 10 per cent in Class 12 to a low of 0.6 per cent in Class 9, is the most restricted range observed.

In summary, the analysis of the soliciting move components in terms of the speakers and of the tasks they call for reveals that the teacher is the primary solicitor and that substantive tasks are more frequently expected than instructional tasks. Considering teachers and pupils as groups, both teachers and pupils call for the performance of a substantive task in about 60 per cent of their components and call for the performance of an instructional task in about 40 per cent of their components. Teacher-substantive components generally account for the majority of components, followed in order of frequency by teacher-instructional components, pupil-substantive components and pupil-instructional components.

The Solicitor and Agent

The solicitor's indication of the agent is a significant aspect of the soliciting component. As indicated in Table 4, when the teacher is the solicitor, he

TABLE 4

DISTRIBUTION OF SOLICITING COMPONENTS BY AGENT FOR SPEAKER AND SPEAKER-TASK

Agent	Speaker of Soliciting Component											
	Teacher						Pupil					
	Total		Substantive		Instructional		Total		Substantive		Instructional	
	%	f	%	f	%	f	%	f	%	f	%	f
Total	100.0	4695	100.0	2889	100.0	1806	100.0	682	100.0	446	100.0	236
Teacher	-	-	-	-	-	-	83.3	568	85.9	383	78.4	185
Pupil	94.2	4423	99.8	2883	85.3	1540	16.3	111	14.1	63	20.3	48
Specified	51.3	2410	38.6	1115	71.8	1295	11.3	77	9.2	41	15.3	36
Selected	19.9	935	29.2	844	5.0	91	0.3	2	0	0	0.8	2
Any	23.0	1078	32.0	924	8.5	154	4.7	32	4.9	22	4.2	10
All Pupils	5.8	272	0.2	6	14.7	266	0.4	3	0	0	1.3	3

usually expects one pupil to present the responding move, rather than several pupils or all pupils in unison. When the pupil is the solicitor, he ordinarily expects the teacher to respond, rather than one or more of his fellow pupils: the pupil directs 83.3 per cent of his soliciting components to the teacher.

The expected interaction pattern, established by the solicitor's verbal clues regarding the responding agent, varies in relation to the nature of the task. When the teacher expects all pupils to perform, the task is most likely to be instructional: the teacher directs 14.7 per cent of his instructional task components to all pupils. In contrast, he directs only 0.2 per cent of his substantive task components to all pupils.

The teacher's manner of designating the one pupil he expects to perform is also related to task. When the task is substantive, the teacher presents 38.6 per cent of the directives to a specific individual; but when the task is instructional, he presents 71.8 per cent of the components to a specific individual. When the task is substantive, therefore, the teacher tends to leave the specification of agent somewhat more open in terms of verbal clues than he does when the task is instructional. When a pupil is to perform a substantive task, the teacher is more likely to select a pupil or to permit any one pupil to perform than he is to specify an individual pupil.

When the pupil directs his solicitation to the teacher, the task is more likely to be substantive than instructional. When a pupil addresses another pupil, the task is also more likely to be substantive than instructional.

In identifying the agent, the teacher and the pupil are alike in two respects: both generally expect one agent to respond and both expect the interaction to be between teacher and pupil, even though the pupil can initiate pupil-pupil interaction.

Logical Process Activities

Indication of the logical process or extra-logical process that the agent is to use in responding is one of the principal means by which the solicitor specifies limits within which an acceptable reply will fall. Viewing the logical processes as a whole, regardless of task, analytic processes (defining and interpreting) account for 10.7 per cent of the soliciting components, empirical processes (fact stating and explaining) for 59.1 per cent, evaluative processes (opining and justifying) for 4.9 per cent, and extra-logical processes for 25.2 per cent.

Logical Processes with Substantive Tasks. As indicated in Table 5, of the three logical modes, the empirical mode is expected in 80.2 per cent of the

TABLE 5

DISTRIBUTION OF SOLICITING COMPONENTS BY LOGICAL ACTIVITY FOR TASK AND TASK-SPEAKER

Logical	Substantive Task						Instructional Task					
	Total		Teacher		Pupil		Total		Teacher		Pupil	
Process	%	f	%	f	%	f	%	f	%	f	%	f
Total	100.0	3335	100.0	2889	100.0	446	100.0	2042	100.0	1806	100.0	236
Analytic	14.4	483	15.7	454	6.5	29	4.5	91	3.6	64	11.4	27
DEF	13.1	438	14.2	411	6.1	27	.1	1	.1	1	0	0
INT	1.3	45	1.5	43	.4	2	4.4	90	3.5	63	11.4	27
Empirical	80.2	2674	79.5	2298	84.3	376	24.6	503	20.9	378	53.0	125
FAC	37.0	1235	36.1	1044	42.8	191	23.8	486	20.4	368	50.0	118
XPL	43.2	1439	43.4	1254	41.5	185	.8	17	.5	10	3.0	7
Evaluative	5.2	172	4.7	135	8.3	37	4.7	95	3.5	63	13.5	32
OPN	3.7	123	3.5	100	5.2	23	4.4	89	3.2	58	13.1	31
JUS	1.5	49	1.2	35	3.1	14	.3	6	.3	5	.4	1
Extra-Logical	-	-	-	-	-	-	66.2	1353	72.0	1301	22.1	52
PRO	-	-	-	-	-	-	38.4	783	42.7	771	5.1	12
PLG	-	-	-	-	-	-	11.1	227	12.4	224	1.3	3
PNL	-	-	-	-	-	-	4.9	101	5.2	94	3.0	7
RPT	-	-	-	-	-	-	11.6	237	11.5	208	12.3	29
DIR	-	-	-	-	-	-	.2	5	.2	4	.4	1
NCL	.2	6	.1	2	.9	4	-	-	-	-	-	-

soliciting components that call for the performance of a substantive task: the solicitor expects fact stating in response to 37 per cent of the substantive task directives, and explaining in reply to 43.2 per cent. In contrast, the solicitor expects a type of analytic meaning in the responding move to 14.4 per cent of the components (defining in 13.1 per cent and interpreting in 1.3 per cent), and the evaluative mode in only 5.2 per cent (opining in 3.7 per cent and justifying in 1.5 per cent). The ratio of expected responding components with empirical meaning to those with evaluative meaning is 15 to 1. This ratio is significant in view of the fact that trade policies, which inevitably involve opining and justifying opinions, might reasonably be considered of central importance in discussions of international trade, the topic under study in the classes observed.

The data in Table 5 also indicate that both the teacher and the pupil in a majority of their substantive task components call for information with empirical meaning: the teacher expects the pupil to reply to 36.1 per cent of his components with a statement of fact and to 43.4 per cent with an explanation. Similarly, the pupil expects 42.8 per cent of the responding moves to be statements of fact and 41.5 per cent to be explanatory statements. The pupil tends to call for replies with evaluative meaning more frequently than does the teacher: the pupil expects responding moves with evaluative meaning to 8.3 per cent of his components, while the teacher calls for evaluative statements in only 4.7 per cent of his components. In contrast, the teacher is more likely to call for statements with analytic meaning than is the pupil: while the teacher expects analytic statements in the replies to 15.7 per cent of his components, the pupil expects analytic statements in only 6.5 per cent of his components. Both the teacher and the pupil expect defining more frequently than they expect interpreting.

Logical and Extra-Logical Processes with Instructional Tasks. In contrast to substantive tasks which involve only logical processes, instructional tasks may involve either logical processes or extra-logical processes, such as repeating, performing and directing. When the solicitor calls for the performance of an instructional task, he expects 66.2 per cent of the responding moves to involve extra-logical processes and 33.8 per cent to involve logical processes.

Components in which the solicitor expects the performance of an oral activity, but does not call for the presentation of specific information, account for 38.4 per cent of all instructional task components. In such cases the solicitor, most frequently the teacher, calls the name of the agent (e.g., "John") and expects him to determine the nature of his own move. Almost 15 per cent of the teacher's soliciting components are of this type, and with it he controls the flow of class discussion by designating which pupils shall speak and in what order. Directing a person to perform with language in a non-oral form (such as reading and writing) and directing a speaker to repeat a statement each account for slightly more than 11 per cent of the instructional task components.

Of the instructional task components that call for tasks involving logical processes, most expect a reply with empirical meaning and most of these expect factual statements Speakers infrequently call for instructional tasks with analytic or evaluative meaning, and even more rarely do they call for explanations of instructional matters.

The differences between the teacher's and the pupil's instructional task directives are much more pronounced than their differences in substantive task directives. While the teacher calls for tasks with extra-logical meaning in 72.0 per cent of his instructional task components, the pupil calls for such tasks in only 22 I per cent of his instructional task components On the other hand, the pupil calls for fact stating in 50 0 per cent of his instructional task components, but the teacher calls for fact stating in only 20 4 per cent of his instructional task components. These data indicate that the pupil generally expects specific factual information about instructional matters such as assignments and materials, while the teacher usually expects extra-logical performances, such as oral activity, repeating and directing Another difference between the teacher and the pupil is that the pupil tends to call for interpretations of and opinions about instructional matters more frequently than does the teacher.

The Information Process Activity

In addition to indicating the logical process activity, the solicitor also specifies the information process activity necessary for the performance of the expected responding move. Table 6 summarizes the data regarding the operations the agents are expected to perform with the information presented in the soliciting move.

Constructing a response on the basis of information presented (C) is the information process called for most frequently: in 73.8 per cent of the soliciting components the speaker directs the agent to construct a responding move that completes or extends the information in the soliciting components. In 18.4 per cent of the components, the speaker directs the agent to assign a truth function (A) to the information presented, that is, to state whether the information given is true or false The ratio of constructing processes to assigning processes is 4:1 The constructing/assigning process, in which the agent is expected to assign a truth function and/or to construct a response, accounts for only six per cent of the total soliciting components. In only 1.8 per cent of the soliciting components does the solicitor expect the agent to select one or more of the stated alternatives (S). The information process of selecting/assigning (S/A) was not observed in the protocols.

When one considers the substantive task components and the instructional task components separately, the percentages for the various information process

TABLE 6

DISTRIBUTION OF SOLICITING COMPONENTS BY INFORMATION ACTIVITY FOR TASK AND TASK-SPEAKER

Information Activity	All		Substantive Task						Instructional Task					
			Total		Teacher		Pupil		Total		Teacher		Pupil	
	%	f	%	f	%	f	%	f	%	f	%	f	%	f
Total	100.0	5377	100.0	3335	100.0	2889	100.0	446	100.0	2042	100.0	1806	100.0	236
Assign	18.4	988	19.1	630	12.5	360	60.5	270	17.5	358	13.3	240	50.0	118
Select	1.8	101	2.3	77	2.0	58	4.3	19	1.1	24	0.8	14	4.3	10
Construct	73.8	3968	73.0	2438	79.2	2287	33.9	151	75.0	1530	79.2	1431	41.9	99
Construct/ Assign	6.0	320	5.6	190	6.3	184	1.3	6	6.4	130	6.7	121	3.8	9

activities are very much the same, as shown in Table 6. The difference in any instance is no larger than 1.8 percentage points.

The slight differences observed when one relates information process and task are in contrast to the greater variability when one relates information process and speaker. The teacher and the pupil differ markedly in their use of the information processes. The differences between the teacher and the pupil are highlighted when one considers the substantive task directives and the instructional task directives by the teacher and by the pupil. Of the teacher's substantive task components, 79.2 per cent call for the constructing operation (C), but the pupil expects the constructing operation in only 33.9 per cent of his substantive task components. In contrast, the pupil calls for assigning a truth function (A) in 60.5 per cent of his substantive directives, while the teacher calls for assigning a truth function in only 12.5 per cent of his substantive components. The pupil's directives thus tend to involve questions that can be answered "Yes" or "No," while the teacher tends to expect respondents to construct their own replies. For the selecting from alternatives process (S) and the constructing/assigning process (C/A) the differences between the teacher and the pupil are less pronounced.

For instructional task directives, the picture is very much as it is for substantive directives. Whereas the teacher expects the respondent to construct a reply (C) in 79.2 per cent of his instructional components, the pupil expects the agent to do so in only 41.9 per cent of his components. But when it comes to assigning a truth function (A), the pupil expects this operation in 50.0 per cent of his components, whereas the teacher expects an answer of "Yes or No" to only 13.3 per cent of his directives. The differences for selecting from alternatives (S) and constructing/assigning (C/A) are again not as great.

The Speakers, the Tasks, and the Primary Activities

Having analyzed the soliciting components in terms of the speakers (teacher and pupil), the tasks (substantive and instructional) and the primary activities (logical process and information process), one can gain an overview of the soliciting components by considering these factors in relation to each other. Table 7 provides an overview of the 25 principal component types defined in terms of speaker, task, logical process and information process. The 25 most frequent component types account for 90.5 per cent of all soliciting components; the top ten component types include 74 per cent of all components, while the next 15 component types account for only an additional 16.5 per cent.

Of the top 25 component types, the teacher speaks 19 and the pupil speaks six. In 15 of the component types the speaker specifies a substantive task and in 10 he specifies an instructional task. The information process of

TABLE 7

THE TWENTY-FIVE MOST FREQUENT SOLICITING COMPONENT TYPES

Rank	% of SOL Components	f	Soliciting Component Type			
			Speaker	Task	Logical Activity	Information Activity
1	19.9	1070	Teacher	Sub	Explaining	Construct
2	14.3	770	Teacher	Sub	Fact Stating	Construct
3	14.2	764	Teacher	Inst	Perform Oral	Construct
4	6.5	350	Teacher	Sub	Defining	Construct
5	4.1	223	Teacher	Inst	Perform Lang.	Construct
6	3.9	208	Teacher	Inst	Repeating	Construct
7	3.4	182	Teacher	Inst	Fact Stating	Assign
8	3.2	172	Teacher	Sub	Fact Stating	Assign
9	2.6	140	Pupil	Sub	Fact Stating	Assign
10	1.9	103	Teacher	Sub	Explaining	Assign
11	1.7	94	Pupil	Sub	Explaining	Construct
12	1.7	94	Teacher	Inst	Perform No/Lng	Construct
13	1.6	84	Pupil	Sub	Explaining	Assign
14	1.3	71	Teacher	Sub	Fact Stating	C/A
15	1.3	69	Teacher	Sub	Explaining	C/A
16	1.3	68	Pupil	Inst	Fact Stating	Assign
17	1.3	68	Teacher	Inst	Fact Stating	Construct
18	1.1	58	Teacher	Sub	Opining	Assign
19	1.0	52	Teacher	Inst	Interpreting	Construct
20	.9	47	Teacher	Inst	Opining	Assign
21	.7	36	Pupil	Sub	Fact Stating	Construct
22	.7	36	Pupil	Inst	Fact Stating	Construct
23	.7	35	Teacher	Sub	Opining	Construct
24	.6	33	Teacher	Sub	Interpreting	Construct
25	.6	32	Teacher	Sub	Defining	C/A

constructing (C) accounts for 14 of the top 25 component types, while assigning a truth function (A) accounts for eight and constructing/assigning (C/A) accounts for three. The information process of selecting (S) is so infrequently used that it is not included in the top 25 component types.

Of the top 10 component types, the teacher speaks nine and the pupil speaks one. In six of the top 10, the speaker calls for the performance of a substantive task and in four he calls for the performance of an instructional task. The information process activity is constructing (C) for the first six component types and is assigning a truth function (A) for the remaining four of the top ten. The teacher's nine most frequent component types account for 81.9 per cent of the teacher's components.

Perhaps most revealing is the fact that the first four component types account for 54.9 per cent of all soliciting components. The teacher speaks all four component types; in all four the teacher specifies that the information process activity is to be constructing (C); in two of the four he expects the empirical process activity; and in three of the four he expects the performance of a substantive task.

Clues Regarding Appropriate Terms

The speaker of a soliciting move frequently gives clues regarding terms that are appropriate for the responding move. The clue most frequently given is the propositional function word, or F-word (e.g., "What do you think?"). The solicitor presents an F-word in 49.0 per cent of all soliciting components. The next most frequently observed clue is a clue to parallelism, which the solicitor presents in 6.8 per cent of all components. The solicitor presents a leading expression indicating which truth function is expected (e.g., "Don't you think that...") in 4.5 per cent of all components. Seldom does the solicitor present those clues most directly related to the terms of the expected response -- citing terms and excluding terms: the speaker cites terms in only 0.5 per cent of the components and excludes terms in only 1.3 per cent of the components.

Clues regarding appropriate terms are given more frequently in components that call for substantive tasks than in those that call for instructional tasks: 87 per cent of all clues appear in substantive directives, while only 13 per cent appear in instructional directives. Furthermore, it is usually the teacher rather than the pupil who offers clues: the teacher presents 89.2 per cent of all clues observed in the discourse.

The data summarized in Table 8 indicate that the teacher and the pupil differ greatly in their use of the various clues. For the teacher-substantive components, 73.8 per cent contain an F-word, but for the pupil-substantive components,

TABLE 8

PERCENTAGE OF SOLICITING COMPONENTS WITH CLUES FOR TASK AND SPEAKER-TASK

Clue	Substantive Task						Instructional Task					
	Total		Teacher		Pupil		Total		Teacher		Pupil	
	%	f	%	f	%	f	%	f	%	f	%	f
F-Word	68.8	2294	73.8	2131	36.5	163	16.7	342	15.2	274	28.8	68
Cite Term	0.7	25	0.8	24	0.2	1	0.1	1	0.1	1	0	0
Exclude Term	1.9	65	2.2	63	0.4	2	0.3	6	0.3	6	0	0
Parallel Term	10.0	333	11.4	329	1.0	4	1.6	33	1.7	30	1.3	3
Leading	5.8	193	2.8	82	24.9	111	2.4	49	2.2	40	3.8	9
Total Number of Soliciting Components	-	3335	-	2889	-	446	-	2042	-	1806	-	236

only 36.5 per cent contain an F-word. The reverse relationship is observed when the task is instructional: the pupil uses an F-word in 28.8 per cent of his instructional components, but the teacher uses an F-word in only 15.2 per cent of his instructional components. Neither teacher nor pupil frequently uses the leading expression when the task is an instructional one, but the pupil does provide a lead for 24.9 per cent of his substantive components, while the teacher offers a lead in only 2.8 per cent of his substantive components. That the pupil offers clues less often than does the teacher is generally true, but the pupil does offer clues more often than does the teacher when the task is an instructional one; the pupil presents 33.9 per cent of his instructional tasks with a clue, while the teacher presents only 18.9 per cent with a clue

Propositional Function Words Table 9 presents data showing the frequency with which the teacher and the pupil use F-words in relation to the task called for. The most frequently used F-word is the general 'what' (e.g., What do you suggest?): 'what' is used in 46.3 per cent of all soliciting components that include F-words. The teacher uses 'what' in 44.8 per cent of the substantive task directives in which he presents an F-word, 'why' in 18.6 per cent, and 'which' in 13.4 per cent. In contrast, the pupil uses 'what' in 25.8 per cent of the substantive task directives in which he presents an F-word, 'how' in 18.5 per cent, and 'why' in 24.6 per cent. The pupil relies less heavily on the general 'what' than does the teacher in substantive directives; instead, he is somewhat more likely to use 'why' and 'how'.

That 'what' is the primary F-word is even more apparent when one considers their use in the instructional directives. The teacher uses 'what' in 69.3 per cent of all of his instructional components that include an F-word, and the pupil uses 'what' in 47.1 per cent of all his instructional components that include an F-word.

The Type of Behavior and the Occasion

Each soliciting move is presented to one or more persons in the class, and is designed to elicit some type of behavior which is to occur at some time and place.

The data show that the solicitors expect linguistic behavior in response to 98.1 per cent of the 5,377 soliciting components. It is only with an instructional task that the speaker may call for non-linguistic behavior, such as setting up classroom equipment or distributing materials. He does so in only five per cent of the instructional task directives. The teacher speaks almost all of the components to which a non-linguistic responding move is appropriate. In contrast, the pupil speaks only seven such moves, and he never addresses one to the teacher.

TABLE 9

DISTRIBUTION OF PROPOSITIONAL FUNCTION WORD BY TASK AND TASK-SPEAKER

Propositional Function Word	Total		Substantive Task						Instructional Task					
			Total		Teacher		Pupil		Total		Teacher		Pupil	
	%	f	%	f	%	f	%	f	%	f	%	f	%	f
All Combined	100.0	2636	100.0	2294	100.0	2131	100.0	163	100.0	342	100.0	274	100.0	68
What	46.3	1219	43.5	997	44.8	955	25.8	42	64.9	222	69.3	190	47.1	32
What About	2.4	64	2.3	52	1.9	41	6.7	11	3.5	12	2.9	8	5.9	4
What Type	3.8	101	4.4	101	4.7	100	.6	1	0	0	0	0	0	0
How	7.4	195	8.0	183	7.2	153	18.5	30	3.5	12	3.3	9	4.4	3
Why	17.1	451	19.0	437	18.6	397	24.6	40	4.1	14	4.0	11	4.4	3
Who	3.2	84	2.8	64	2.6	56	4.9	8	5.8	20	7.3	20	0	0
When	.6	16	0.5	12	.5	11	.6	1	1.2	4	.4	1	4.4	3
Where	3.6	94	3.4	78	3.2	68	6.1	10	4.7	16	3.3	9	10.3	7
How Much	3.3	88	3.3	75	3.1	65	6.1	10	3.8	13	2.2	6	10.3	7
Which	12.3	324	12.8	295	13.4	285	6.1	10	8.5	29	7.3	20	13.2	9

The solicitors indicate that they expect 87.7 per cent of responding moves to be presented immediately and expect 98.1 per cent of the responding moves to occur within the classroom. The pupil never expects the teacher to defer action or to act outside the classroom. Furthermore, the pupil never expects a fellow pupil to defer action, and in only one of his 682 solicitations does he expect a fellow pupil to act outside the classroom. The teacher is more likely to expect deferred action and action outside the classroom, and the majority of deferred/out-of-class expectations are teacher's instructions about assignments.

Stylistic Meaning

Stylistic meaning, which describes the action of the solicitor and not the anticipated action of the agent, refers to the solicitor's manner of presenting the indicative meaning, that is, "how" he makes his expectation known.

Length of Solicitations. The mean length of soliciting moves in terms of lines of typescript is 1.9. This contrasts with the mean length of 9.1 lines for structuring, 3.5 lines for reacting and 2.0 lines for responding. Teacher solicitations tend to be longer than pupil soliciting moves: the average number of lines in teacher soliciting moves is 1.9 lines, while the average for the pupil is 1.5. The teacher substantive directive averages 2.0 lines, while the average teacher instructional directive is 1.7 lines.

Mode of Presentation. The solicitor may present the soliciting component as a request, as a command, or as an assertion to which the agent is expected to respond. The data indicate that the teacher presents 65.5 per cent of his soliciting components as a request for action, while the pupil presents 90.6 per cent of his components as a request. On the other hand, the teacher expresses the solicitation as a command for action when he presents 29.8 per cent of his components, but the pupil presents only 7.6 per cent of his components as a command. Clearly, the major mode is the request and the teacher is freer to command action than is the pupil.

In terms of speaker and task, the solicitors use the command chiefly with the instructional task, and the teacher uses the command to a greater extent than does the pupil. The teacher presents 4.6 per cent of his substantive task components as commands, while the pupil presents only 1.4 per cent of his substantive task components as a command. When the task is an instructional one, however, the teacher presents 70 per cent of the components as a command, but the pupil presents only 19.5 per cent as a command.

The speakers present three per cent of all soliciting moves as assertions; that is, the solicitors present 163 of the components as statements intended to be taken as calls to action. This finding suggests the limitation in considering all response-expectant moves as "questions."

Construction of Component. The teacher, rather than the pupil, is likely to use special constructions in presenting the soliciting move. The teacher presents half of his instructional tasks in an elliptical manner and over 10 per cent of his substantive tasks in a conditional context, in an incomplete manner, and/or with interlarded information. The pupil's use of special constructions exceeds the teacher's use in only one instance: the pupil more frequently presents his substantive tasks in a conditional context.

The greatest difference between the teacher and the pupil is their presentation of components in an incomplete manner. The use of this construction suggests that the speaker did not initially intend to solicit, but changed his intent after he had begun to speak. The data indicate that the pupil infrequently solicits in this way, and the teacher seldom does when the task is an instructional one. When the teacher presents a substantive task, however, he presents 12.3 per cent as incomplete (for example, "We usually import very little of our foodstuffs, instead we generally...").

Interlarding information is more frequent with substantive tasks, and the teacher interlards information twice as often as does the pupil. Paralleling this observation is the fact that it is the teacher who frequently amplifies the nature of the primary activities; 17 per cent of all teacher components are amplified by rephrasing or clarifying. That amplification is more frequently observed with substantive tasks than with instructional tasks seems to indicate that the teacher is more certain of the response he wants to elicit when he talks about instructional matters than when he talks about the subject matter under study.

The use of the incomplete construction, interlarding, and amplifying by the teacher suggests he does not think out his solicitations as carefully as does the pupil, who generally must seek permission before he speaks. In other words, the pupil thinks out his move, seeks permission to make the move, and then speaks. The data seem to indicate that in many instances the teacher does not think carefully about the move before speaking, but attempts to arrive at some notion of his expectation as he speaks.

Composition of the Move. Only 242, or 4.7 per cent of all soliciting moves, are two-component moves. The teacher speaks all but seven of the two-component moves. When the teacher speaks these moves, he usually expects one of the tasks to be substantive in nature, and frequently expects both tasks to be substantive. When the teacher presents more than one task in a move, he most frequently expects the same information process for both tasks, but expects the performance of two different logical process activities. In such two-component moves, the information process is usually constructing and the logical process activities are generally fact stating and explaining.

The Responding Move

Responding moves account for about 30 per cent of all moves spoken in the discourse. The median percentage is 27.6 for the 15 classes, with a high of 33.6 per cent in Class 13 to a low of 23.5 per cent in Class 5. As indicated in Table 10, the responding move plays a more significant part in the pupil's discourse than it does in the teacher's discourse: responding moves account for 65.4 per cent of the pupil's moves, but only 5.5 per cent of the teacher's moves. In every class the pupil speaks at least three-fourths of all responding moves.

The chief significance of the responding move is that it serves to fulfill the expectation of the soliciting move. By relating dimensions of the responding move to dimensions of the soliciting move that elicited it, one can determine to what extent the responding move actually fulfills the expectation of the soliciting move. Congruence, a measure of the observed reciprocity that exists between the responding move and the soliciting move, is observed for the task and for the two primary activities -- the logical process activity and the information process activity.

Task Congruence. The task the solicitor expects the agent to perform is either a substantive task or an instructional task. As indicated in Table 11, the respondent usually performs a task that is consistent with the expectation of the solicitor: in 92 per cent of the 4,705 responding components, the respondent performs a task expected by the solicitor. In 3.3 per cent of the responding components the respondent ignores a task specified by the solicitor in a two-task solicitation, and in 1.9 per cent of the responding components the respondent performs a task not anticipated by the solicitor. In only 2.8 per cent of the responding components does the respondent perform a task that is incongruent with the expressed expectation of the solicitor.

The teacher tends to perform tasks not anticipated by the solicitor, while the pupil tends to perform tasks that are incongruent with the expressed expectation of the solicitor or to ignore the task. When the pupil is the respondent, he ignores 137 substantive tasks and 17 instructional tasks; in addition, he speaks 52 substantive responding components and 49 instructional responding components that are incongruent with the solicitor's expectations.

TABLE 10

PERCENTAGE OF THE TEACHERS' AND PUPILS' MOVES AND LINES DEVOTED TO RESPONDING FOR EACH OF THE FIFTEEN CLASSES AND FOR ALL CLASSES COMBINED

Class	Teacher		Pupil	
	Moves	Lines	Moves	Lines
All Combined	5.5	6.8	65.4	57.5
1	1.8	1.6	76.1	76.0
2	2.2	1.6	67.1	62.8
3	3.2	5.2	70.2	59.9
4	4.4	5.7	65.2	64.2
5	9.9	15.3	42.7	36.7
6	4.1	6.0	77.6	80.3
7	9.2	10.5	58.9	47.9
8	6.8	11.5	59.4	55.3
9	2.1	0.9	80.6	80.8
10	4.0	7.0	66.7	55.9
11	2.8	3.5	80.9	51.6
12	10.5	9.0	44.6	37.4
13	6.0	8.3	75.1	73.8
14	3.6	4.1	74.2	62.2
15	9.2	14.9	55.4	44.1

TABLE 11

DISTRIBUTION OF RESPONDING COMPONENTS ACCORDING TO TASK AND LOGICAL ACTIVITY CONGRUENCE

Task and Logical Process Activity Congruence	Teacher and Pupil		Teacher Responding Component				Pupil Responding Component			
			Substantive		Instructional		Substantive		Instructional	
	%	f	%	f	%	f	%	f	%	f
Total	100.0	4705	100.0	356	100.0	218	100.0	3548	100.0	583
Task										
Incongruent	2.8	131	3.9	14	7.3	16	1.5	52	8.4	49
Ignored	3.3	156	.5	2	0	0	3.9	137	2.9	17
Added	1.9	89	1.4	5	19.3	42	.6	20	3.8	22
Logical Process Activity										
Primary Congruence	84.0	3951	77.2	275	69.3	151	86.0	3054	80.8	471
Ascending Modal Congruence	3.8	181	12.7	45	2.8	6	3.6	126	.7	4
Descending Modal Congruence	1.2	56	2.6	9	0	0	1.2	43	.7	4
Implicit Congruence	1.8	87	.3	1	.4	1	2.2	78	1.2	7
Modal Incongruence	1.2	54	1.4	5	.9	2	1.0	38	1.5	9

While the pupil is the respondent who ignores tasks and performs tasks inconsistent with the solicitor's expectations, it is the teacher who includes an additional unsolicited task in his responding move. The unsolicited task added by the teacher is usually an instructional one: 42 of the 47 tasks the teacher adds are instructional in nature.

Logical Process Congruence. The logical process activity, as one of the primary activities specified by the solicitor, is directly related to the task. When the respondent does not perform a task consistent with the solicitor's expectation, the respondent cannot perform the task-related logical process. Since eight per cent of the responding components represent tasks that are inconsistent with the solicitor's expectation, in 92 per cent of the responding move components can there be a logical process activity that is congruent with the expectation of the solicitor.

There are four types of logical process congruence: primary, ascending modal, descending modal, and implicit congruence. Primary congruence indicates that the respondent uses the logical process within each of the three modes according to the solicitor's expectation; for example, the solicitor expects fact stating and the respondent answers with a factual statement, or the solicitor expects explaining and the respondent replies with an explanation. Ascending modal congruence indicates that the respondent uses the more complex process within a given logical mode; for example, the solicitor expects fact stating, but the respondent replies with explaining. In the case of descending modal congruence, the reverse is the case: the solicitor expects the more complex process within a given logical mode (e.g., explaining), but the respondent uses the less complex (e.g., fact stating). Implicit congruence indicates that the solicitor did not specify a particular logical process activity, but left the choice to the respondent.

Modal logical incongruence indicates that the respondent uses a logical mode different from that expected by the solicitor; for example, the solicitor expects opining or justifying (evaluative mode) and the respondent answers with fact stating or explaining (empirical mode).

The data in Table 11 show that there is primary congruence between the expected and the observed logical process activity in 84 per cent of the responding move components. Primary congruence is highest in the pupil-substantive task responding components, and is lowest in the teacher-instructional task responding components, where the percentages are 86 and 69.3 respectively.

In general, neither the teacher nor pupil as respondent uses the more complex process when the less complex process will suffice. Ascending modal congruence accounts for only 3.8 per cent of all responding move components.

Although in terms of frequencies ascending congruence is most often observed in pupil-substantive responding moves, ascending congruence accounts for a larger percentage of teacher-substantive task responding components. Ascending congruence is seldom related to an instructional task.

Descending modal congruence (1.2 per cent) is less frequently observed than is ascending modal congruence (3.8 per cent). As with ascending modal congruence, descending modal congruence accounts for a larger percentage of the teacher-substantive responding components (2.6 per cent), but is most frequently observed with the pupil-substantive task components (43 components, 1.2 per cent).

Modal logical incongruence, in which the respondent's logical mode is different from that expected by the solicitor, occurs in only 54, or 1.2 per cent, of the 4,705 responding components. Of these, the pupil presents 47.

Implicit congruence accounts for 87, or 1.8 per cent, of all responding move components; of these, almost all occur with pupil-substantive task components.

Information Process Congruence. The analysis of the soliciting move components shows that the teacher, as the chief solicitor, most frequently expects the constructing process, and the pupil most frequently expects the assigning process. In terms of the responding move, the teacher is expected to assign truth functions and the pupil is expected to construct.

The data included in Table 12 indicate that the teacher and the pupil use the expected information process in 87.0 per cent of the responding components, while 7.7 per cent of their responding components are incongruent with the soliciting components that elicited them.

The teacher uses the expected information process in 75.8 per cent of his substantive components, and in 61.9 per cent of his instructional components. In contrast, the pupil uses the expected information process in 90.3 per cent of his substantive components and in 83.7 per cent of his instructional components.

The incidence of information process incongruence is 21.7 per cent for the teacher's substantive components and 18.6 per cent for his instructional components. In contrast, 5.3 per cent of the pupil's substantive-task components and 9.6 per cent of the pupil's instructional-task components are incongruent.

The percentage of congruence is highest for the teacher in substantive responding components in which the information process is constructing: all of the teacher's substantive-constructing components, which account for 19.7 per cent

TABLE 12

DISTRIBUTION OF RESPONDING COMPONENTS ACCORDING TO INFORMATION ACTIVITY CONGRUENCE

Information Activity Congruence	Teacher and Pupil		Teacher Responding Component				Pupil Responding Component			
			Substantive		Instructional		Substantive		Instructional	
	%	f	%	f	%	f	%	f	%	f
Total	100.0	4705	100.0	356	100.0	218	100.0	3548	100.0	583
Congruent	87.0	4096	75.8	270	61.9	135	90.3	3203	83.7	488
Assigning	11.6	548	40.5	144	28.9	63	6.7	236	18.0	105
Selecting	1.5	72	2.5	9	3.2	7	1.3	47	1.5	9
Constructing	68.6	3228	31.7	113	27.5	60	76.4	2711	59.1	344
Construct/Assigning	5.3	248	1.1	4	2.3	5	5.9	209	5.1	30
Incongruent	7.7	363	21.9	78	18.8	41	5.3	188	9.6	56
Assigning	6.3	295	19.8	70	15.7	34	4.5	157	5.8	34
Selecting	.7	35	1.9	7	2.3	5	.5	18	.9	5
Constructing	.2	9	.0	0	.4	1	.1	5	.5	3
Construct/Assigning	.5	24	.2	1	.4	1	.2	8	2.4	14
Ignored	3.4	157	.8	3	0	0	3.9	137	2.9	17
Assigning	1.2	55	.6	2	0	0	1.4	50	.5	3
Selecting	.1	3	0	0	0	0	.1	3	0	0
Constructing	1.8	85	0	0	0	0	2.1	73	2.1	12
Construct/Assigning	.3	14	.2	1	0	0	.3	11	.3	2
Component Added	1.9	89	1.5	5	19.3	42	.5	20	3.8	22

of all teacher responding components, reflect basic congruence. Similarly, the percentage of congruence is highest for the pupil in substantive-task components in which the information process is constructing: 97.2 per cent of the pupil's substantive-constructing components reflect operational congruence. Such components account for 67.5 per cent of all pupil responding components.

The percentage of incongruence is highest when the processes are selecting and assigning. When the expected information process is assigning a truth function, both teachers and pupils present one-third of their response components with incongruent processes. When the expected information process is selecting, the teacher does not fulfill the expectation in 42.8 per cent of the responding components, and the pupil does not fulfill the expectation in 28 per cent of the responding components.

Observation of the congruence between responding components and the soliciting components warrants the conclusions that the teacher performs the expected information process less often than the pupil, and most notably when the anticipated process is assigning or selecting.

Summary of Results

1. Reflexive moves are more numerous than initiatory moves; nevertheless, the initiatory soliciting move is the most frequently made move. In each of the 15 classes about one-third of all moves are soliciting moves.

2. The teacher is the chief solicitor; he speaks 86.9 per cent of all soliciting moves. For the teacher, 46.6 per cent of his moves are solicitations, while for the pupil only 11.3 per cent are solicitations.

3. The teacher and the pupil expect the performance of a substantive task in about 60 per cent of their moves and the performance of an instructional task in approximately 40 per cent of their moves. In no class do the speakers expect less than 45 per cent of responding moves to involve a substantive task.

4. The solicitor seldom presents more than one task in the solicitation; when he does, one of them is usually a substantive task. In the two-task move, the solicitor usually expects two different logical process activities but the same information process activity for both tasks. The logical processes are most often stating and explaining, and the information process usually is constructing.

5. The solicitor generally expects the respondent to act immediately within the classroom. In few moves does the solicitor indicate that he expects either delayed action or action outside the classroom.

6. The solicitor most frequently expects the respondent to give information with empirical meaning. When the task is substantive, the solicitor more often expects explaining than fact stating. The solicitor infrequently expects responses with analytic meaning or evaluative meaning; however, he expects responses with analytic meaning more frequently than he expects responses with evaluative meaning. With instructional tasks, the teacher generally expects extra-logical meanings, while the pupil expects fact stating.

7. The information processes in order of observed frequency for all speakers are constructing, assigning a truth function, constructing/assigning, and selecting from stated alternatives. The teacher and the pupil differ sharply in their use of the information process: the teacher expects the constructing operation much more frequently than does the pupil, while the pupil calls for assigning a truth function much more frequently than the teacher.

8. The clue the solicitor most frequently gives to indicate the terms appropriate for the responding move is the propositional function word. The most frequently observed function word is 'what.' The second most frequent clue the solicitor gives is the clue to parallel terms. The solicitor rarely cites terms or indicates that certain terms are to be excluded from the responding move.

9. When the teacher solicits, he usually expects one pupil to respond; when the pupil solicits, he usually expects the teacher to respond. The intended interaction, regardless of who solicits, is almost always between teacher and pupil, rather than between pupil and pupil.

10. The solicitor almost always expects the respondent to use language in performing the specified task. While the teacher may sometimes call the performance of actions that do not involve language, the pupil almost never does so.

11. The length of the average soliciting move is about one and one-half lines of typescript. The teacher's moves are generally longer than the pupil's, and the substantive task moves are longer than the instructional task moves.

12. The solicitor usually presents the soliciting move as a request, rather than as an assertion or as a command. The teacher is freer to command action than is the pupil.

13. The respondent performs the task expected by the solicitor in 92 per cent of the responding moves. He generally performs the logical process activity and the information process activity related to the task as expected. The pupil in responding moves to substantive task solicitations performs most often as expected, while the teacher in response to instructional task solicitations shows the lowest rate of congruence. With the logical processes, the pupil tends to shift from one logical mode to another and thereby present logically incongruent

responses, while the teacher is likely to shift from one process to another but stay within the mode in those moves that are not primarily congruent. With the information processes in those moves that are not primarily congruent, both respondents, but especially the teacher, are likely to ignore the processes of selecting from alternatives and assigning a truth function.

CHAPTER FOUR

THE STRUCTURING MOVE

This chapter reports our investigation of the functions of structuring moves and ways in which teachers and pupils carry out these functions in the classroom. The first section presents the conceptual framework underlying the analysis of structuring moves; the second section outlines the system for analysis derived from the conceptual framework; and the third section presents a description of structuring moves in the 15 classes studied.

CONCEPTUAL FRAMEWORK

In the first phase of the research, structuring was conceptualized as an initiatory move whose function is to set the context for classroom behavior by launching interaction between teacher and pupils and by focusing on subject matter to be discussed or procedures to be followed. As an initiatory maneuver, the structuring move is not called out by anything in the immediate classroom situation except the speaker's notion of what should be said or taught. Like soliciting, also an initiatory move, the structuring move conveys directive meaning. However, unlike solicitations which explicitly direct the person(s) addressed to respond, structuring moves implicitly direct classroom activities by setting the context for the behavior of teacher and pupils.

In the second phase of the research we investigated the ways in which structuring moves carry out their directive functions. Two concepts were fruitful in suggesting categories of analysis with which to describe the functions of structuring moves: (1) the notion of the "sub-game" as a segment of the teaching game, and (2) the concept of "directive meaning."

The 'Sub-Game' in the Classroom Game

Just as a football game consists of four quarters of play and a baseball game of nine innings, the classroom game is made up of segments which we designated "sub-games." In this research, the unit on international trade is viewed as a classroom game. Within this game, there are sub-units or sub-games, each of which is identified primarily by the type of activity that is the focus of attention during a given period of play. Student debates, class discussions, viewing films, pupil reports, and taking examinations are examples of activities of sub-games.

In carrying out the function of setting the context for classroom interaction, speakers of structuring moves may set the context for the entire classroom game and/or one or more of the sub-games. For example, on the first day of a unit of work the teacher may structure the game as a whole by announcing the topic for the unit and giving an overview of the subject matter to be studied. Or the teacher may structure a sub-game by announcing a debate, a field trip, or a pupil report. On occasion, the teacher may structure both the game as a whole and one or more sub-games in a single structuring move.

Directive Meaning

The notion of "directive meaning" as developed by Wellman provided the framework for studying the directive functions of structuring moves. According to Wellman, "Any sentence which directs action or tells someone to do something may be said to have directive meaning." (16:228). For Wellman, directive meaning has three basic features: indication, quasi-comparison, and prescription-prohibition. Indication refers to the agent who is to perform the action, the object involved in the action, and a time reference. For example, in the sentence "John, please paint the kitchen door tomorrow," John, the door, and tomorrow are the agent, the object, and the time reference respectively. Quasi-comparison specifies the action to be performed; in the example just cited, painting is the action to be performed. Prescription-prohibition, the central feature of directive meaning, refers to prescribing or prohibiting the performance of an action.

Structuring moves may be said to express directive meaning as interpreted by Wellman. The central feature of directive meaning, prescription-prohibition, parallels the central feature of structuring: speakers of structuring moves get activities under way, halt activities and, on occasion, exclude activities before they get under way. The student chairman who says, "Our next topic for discussion is the Common Market" performs the function of launching discussion on the topic of the Common Market. Because in actual classroom discourse it is difficult to distinguish between the functions of excluding activities and halting activities, we combined these two functions into one function and labeled it halting-excluding. The teacher who says, "That's the end of our time for debate" performs the function of halting-excluding. These two functions, launching and halting-excluding, are the central features of structuring as directive discourse.

Wellman's other features of directive meaning also apply to structuring. Speakers launch and halt-exclude such classroom events as debating, reporting, voting, and collecting homework. These performances, labeled activities, parallel Wellman's feature of quasi-comparison. Speakers also indicate the agent who is to perform these activities. The agent may be the teacher, a pupil, some combination of these classroom participants, or some outside person. Furthermore, speakers frequently make reference to a *time* factor in connection with the activities, either the *beginning point* (i.e., *when* the game or sub-game is to get under way) or the *duration* (i.e., how long the game or sub-game is to continue).

Speakers may also indicate the *topic* for discussion or for study and the *cognitive process* for dealing with that *topic*. For example, a teacher might say, "Let's discuss why the Common Market was organized." In this case the teacher announces the topic of Promoting Free Trade (PFT) and the logical process of explaining (XPL).

Although Wellman's concept of *method* also applies to structuring, the specific categories for this dimension differ from Wellman's categories and are unique to structuring. Examination of the protocols revealed that there are three methods by which speakers carry out the functions of launching and halting-excluding. First, a speaker might simply announce to the class the topic for discussion (e.g., "Let's now go into the Common Market.") and then proceed to entertain questions about it; in this instance, the speaker launches the discussion by *announcing*. On the other hand, a speaker might begin a discussion of the Common Market by tracing its historical development and analyzing its purposes, without explicitly announcing his topic; in this case, the speaker launches by *stating propositions* about the subject. Or a speaker might launch a discussion on the Common Market both by announcing the topic and by tracing its historical development; in this case the speaker launches by *announcing and stating propositions*.

The dimensions of function, method, activity, topic, cognitive process, agent, beginning point in time, and duration of time describe the directive features of structuring moves. Three other dimensions of structuring, although not included in Wellman's concept of directive meaning, merit attention because they describe significant features of classroom discourse: reason giving, instructional aids, and regulations.

In phase one of the research, reason giving was analyzed as one of the logical processes (explaining: XPL) involved in dealing with substantive material; for example, giving explanations why countries engage in international trade and why Europeans established the Common Market. In the analysis of structuring moves, there is yet another kind of reason giving that is pedagogically significant. The concept of reason giving as it relates to structuring is concerned not with substantive explanations, but rather with reasons for the game or sub-game and their various dimensions. For example, a speaker may give reasons why he is launching the certain topic or why he is halting a pupil report.

Examination of the protocols reveals that classroom activities often involve the use of instructional aids such as charts, graphs, newspaper articles, textbooks, and films. Frequently the speaker of a structuring move uses or calls for the use of instructional aids such as these, and we therefore included categories to describe them.

Regulations, the third additional dimension, refers to the rules governing classroom behavior. In directing classroom behavior, the speaker of a structuring move often gives regulations regarding the scope of the topic under study, time sequence, administration, and the "mental associations" to be made: scope specifies what shall be included in the subject matter for discussion; time sequence refers to the order in which announced activities are to occur; administration refers to the use of materials, the roles of participants, and other aspects of classroom management; and "mental associations" refers to what the participants are to do mentally as the activities proceed, such as keeping certain facts in mind and drawing connections between ideas.

Respecification of Structuring Moves. The concept of game/sub-game and the concept of directive meaning establish the conceptual framework for the analysis of structuring moves. The features of directive meaning are viewed as dimensions of the game/sub-game and are described with each game/sub-game identified. As indicated previously, within a single structuring move a speaker may structure the entire game and/or one or more sub-games. When two or more games or sub-games are structured within a single structuring move, each game or sub-game is described in a component in terms of the dimensions indicated above.

This conceptualization of structuring in terms of game/sub-game and directive meaning made necessary minor respecification of the definition of the structuring development in the first phase of the research:

> Structuring moves serve the function of setting the context for subsequent behavior by (1) launching or halting-excluding interaction between pupils and teachers, and (2) indicating the nature of the interaction in terms of the dimensions of time, agent, activity, topic and cognitive process, regulations, reasons, and instructional aids. Structuring moves may set the context for the entire classroom game and/or for one or more sub-games. As initiatory maneuvers, structuring moves are not called out by anything in the immediate classroom situation except the speaker's concept of what should be said or taught.
>
> The postscript -A is adding to a structuring move (STR-A) when the move is a result of an assignment, such as student

reports or debates. The postscript "A" serves to distinguish these moves from those structuring moves that have not been previously assigned.

SYSTEM FOR ANALYSIS

This section outlines the system for analyzing structuring moves which is based on the conceptual framework presented in the preceding section. In addition, coding procedures are illustrated with excerpts from the coded protocols, and results of the reliability test of the system are reported.

Content Analysis System: Part One - Game/Sub-Game and Structuring Move

1. The game and sub-game are the basic units for describing the structuring move. The verbal behavior of the classroom is viewed as a language game that is composed of smaller sets of actions called sub-games. A sub-game is a set of actions with regulations performed by agents during a given period of time and presumably carried out for certain reasons. The various sub-games together constitute the game as a whole.

   For this research, the game is the unit of study on international trade. Examples of sub-games are: a formal debate of two teams of pupils for part of a class session, the viewing of a twenty-minute film on the Common Market by the entire class, and a class discussing foreign investments for an entire session.

2. The structuring move is one of four pedagogical moves which describe in functional terms the verbal maneuvers of the teacher and the pupil in playing the classroom game of teaching. Structuring moves serve the pedagogical function of setting the context for subsequent behavior in the classroom by (a) launching or halting-excluding interaction between pupils and teachers and (b) indicating the nature of the interaction in terms of the dimensions of time, agent, activity, topic and cognitive process, regulations, reasons, and instructional aids. Structuring moves may set the context for the entire classroom game and/or one or more sub-games. Each game or sub-game identified in a structuring move is coded as a component of the structuring move. Structuring moves are initiatory moves which do not elicit a response, are not in themselves direct responses,

and are not called out by anything in the immediate classroom situation except the speaker's concept of what should be said or taught.

The postscript -A is added to a structuring move (STR-A) when the move is a result of an assignment, such as student reports or debates. The postscript serves to distinguish moves of this kind from structuring moves that have not been previously assigned.

Examples

T/STR: Let's now discuss direct investment overseas by Americans. (One sub-game)

T/STR: After we have our debate by the two teams, I shall open the floor for questions, and then I'll let you vote on the issue. (Three sub-games whose activities are debating, questioning from the floor, and voting)

T/STR: Today we begin our unit on trade. We'll be working on it for the entire week. As you know from our discussion in current events, this is a most important topic today . . . (This move structures for the entire game of international trade)

Content Analysis System:
Part Two - Dimensions of the Game/Sub-Game

Ten dimensions of the game/sub-game are included in the analysis of the structuring move: (1) function; (2) method; (3) activity; (4) agent; (5) topic; (6) cognitive process; (7) time; (8) regulation; (9) instructional aid; and (10) reason giving. Within each component these ten dimensions are identified when they appear and are coded according to the rules of analysis described in Appendix B.

1. Function. The speaker performs the function of launching or halting-excluding the game/sub-game.

1.1 Launching. Structuring moves that launch start the game or sub-game on a specified course. The speaker may launch the activity, agent, substantive topic, instructional topic, and cognitive process. He may also indicate the time, regulations, instructional aids to be used, and reasons for the game/sub-game or for one of the dimensions of the game/sub-game.

Examples

T/STR: Now then, could we talk about the importance of investments. In your text they make quite a point of the relationship - and very justly so - of the relationship between trade imports and investment. Because after all money is exported just like anything else in many respects.

T/STR: This topic of the Common Market will be covered in a film which we'll show in just a few minutes.

T/STR: Well, let me try to steer you in the right direction, Jane Let me by asking you perhaps a question or two.

P/STR: I want to ask a question.

1.2 Halting-Excluding. To halt-exclude a game or a sub-game is to set it outside the limits of the activities of the class. The speaker may halt-exclude the dimensions of activity, topic, and cognitive process.

Examples

T/STR: Let's leave out all the products and articles connected with the difference between an area that can and an area that cannot. Let's take something like beef cattle. Now cattle can be raised in large parts of the world. We can raise them in the U.S. We can raise them in Argentina. We raise them in most of Europe.

T/STR: This is the end of our time for debate between the two sides. I would like now to open the arguments to questions from the floor.

T/STR: I think for strategic reasons this would be a good point for us to break.

2. Method. Method refers to the way the speaker carries out the functions of launching and halting-excluding. There are two basic methods: announcing and stating propositions. A speaker may use one or both methods in launching and halting-excluding.

2.1 Announcing. To announce is to give notice about one or more dimensions of the game or sub-game: beginning point in time, duration of time, agent, activity, substantive topic, instructional topic, cognitive process, regulations, instructional aids and reasons.

Examples

T/STR: Now let's take the importance of foreign investment. And of course we're speaking here in general. We just want to clarify it in our own minds.

T/STR: ...For tomorrow we'll take the fourth and last chapter and then on Friday you will see just what this week has earned on this question of international trade.

T/STR: Perhaps now in the minute or two that we have left, we might talk about one of the important aspects of world trade and that is tariffs.

T/STR: Finally, let's discuss the differences and similarities between foreign and domestic trade.

2.2 Stating Propositions. To state propositions is to deal with the subject matter under study by using analytic, empirical, or evaluative language. For description of these logical processes see Appendix A, pp. 200-205.

Examples

T/STR : And we listened to Dr. Nkruma who runs Ghana and agreed to build this dam for them. The idea was that at the bottom of the dam there would be a complete aluminum smelter and factory so that Ghana could turn out finished aluminum products....

P/STR-A: Most of you probably know that South America - most of the South American countries are one-profit economies. You've learned also that this - this isn't very ambitious for a country - 'cause the great industrial nations like the United States or West Europe, they are dependent on them providing progress....

2.3 Announcing and Stating Propositions. To announce and state propositions is to combine the two methods described above in launching or halting-excluding a game or sub-game.

Examples

P/STR-A: I am going to report on the Balance of Payments. In the past few years the gold supply of the U.S. has steadily decreased due to....

T/STR : Now, export control. By export control we mean the government can say to a businessman, "You can't send cloth to China."

3. Activity. Activity refers to oral and non-oral performances carried on by the teacher and pupils.

3.1 General Oral Activity. The speaker indicates that the activity will be oral but does not specify the type of oral activity. Words such as talk, leads into, raise, discuss, take up, go into, come back to, move into are indications that the activity will be oral.

Examples

T/STR: Now then could we talk about the importance of investments....

T/STR: ...then we're going to move into some of the problems presented by this overall pattern of world trade.

3.2 Questioning - Answering. The speaker indicates that the activity will be asking questions and answering questions.

Examples

P/STR: I want to ask you a question.

T/STR: Let me steer you in the right direction -- since this is your report, I will ask you questions about it.

3.3 Reporting. The speaker indicates that the activity will be a report addressed to the class by one or several participants. For the pupil this generally means that he has prepared the report assigned by the teacher.

Examples

T/STR: Linda, I know your report is ready and I'm going to let you give it for all of the class in a minute.

T/STR: This naturally leads us to another area that we pick up - I think we have another group -- series of projects tomorrow -- reports on the Common Market.

3.4 Debating. The speaker indicates that the activity will be debating pro and con on a particular resolution by two or more class participants. Debating includes the presentation of position, rebuttal, and summary of position.

Example

T/STR: All right, today we have scheduled a debate. Now I hope the debate will last all period and I think the issue is controversial enough to go on for more than a period....

3.5 Viewing/Listening to Audio-Visual Device. The speaker indicates that the activity will be viewing and/or listening to a film, phonograph record, film strip, television, radio, or other audio-visual device.

Example

T/STR: We have a film. I'm going to show only part of it, not the total film. The film deals with the Common Market.

3.6 Holding a Panel Discussion. The speaker indicates that the activity will be a formal panel discussion.

Example

T/STR: ...the next day looking at Mr. Kennedy's trade program -- his new tariff program, as well as taking a look at your panel.

3.7 Following Up a Formal Presentation. The speaker indicates that the activity will be a discussion based on a formal presentation of a report, debate, film, or the like. The following up activity means that there will be "comments from the floor" following the presentation.

Example

T/STR: ...After the general debate, I will ask each of the sides to summarize their points of view and then we will entertain questions from the floor.

3.8 Reading and/or Reading and Note Taking. The speaker indicates that the activity will be silent or oral reading and/or reading and taking notes.

Example

T/STR: I'm going to read from the book a paragraph concerning the similarities of domestic and international trade...."Trade takes place between countries...."

3.9 Taking an Examination. The speaker indicates that the activity will be taking an examination or test.

Example

T/STR: This announcement may shock you but part of this course is to see just what after a week of classroom discussion you have learned if anything. So tomorrow you will be tested as a post-war, I guess would be right, as a post-test to compare with the results of the pre-test of last Friday....

3.10 Writing. The speaker indicates that the activity will be writing, other than taking a test, such as filling out a routine questionnaire, taking notes, or writing a composition.

Example

T/STR: Now then, we'll take a few minutes to fill out that little card sent down from the office. I hope you all know your dad's phone number at work.

3.11 Voting. The speaker indicates that the activity will be voting on a particular issue. Voting may be by show of hands, by written ballot, or by voice.

Example

T/STR: ...After all of that is over I will ask the members of the class to vote on the strength of the evidence presented -- not on any foregone conclusion or other ideas but on the strength of the evidence presented which argument you think is better. So I will ask you to vote for a side.

3.12 Giving Instructions. The speaker indicates that the activity will be the giving of instructions to the participants regarding class assignments, class procedures, or general school business.

Example

T/STR: And after you copy down the titles, I will tell you how I would suggest you go about this.

3.13 Meeting in Small Groups. The speaker indicates that the activity will be a small group discussion or committee work on a specified topic.

Example

T/STR: International relations -- you people are still, I hope, working as committees. If you notice on the board as you came in, or maybe it was erased, the other class -- the committees are operating, and they are meeting during this period.

3.14 Taking Attendance. The speaker indicates that the activity will be the taking of attendance orally or by some written means.

Example

T/STR: ...Before I do anything else, let me take the attendance.

3.15 Reviewing. The speaker indicates that the activity will be review of previous classwork.

Example

T/STR: Let us review for just a second, before we continue with the material here, what we covered yesterday. Having established the relationship....

3.16 Taking Field Trip. The speaker indicates that the activity will be a field trip by members of the class as part of their class work.

Example

T/STR: On Monday we'll be going to see the City Council. Jack is in charge of bus fares and is ready to collect from each of you as soon as you can get together your funds.

3.17 Non-Language Routine. The speaker indicates that the activity will be some non-language routine such as collecting texts, distributing graded homework papers, or cleaning up the room.

Example

T/STR: The summaries will be picked up at the end of the period.

4. Agent. Agent refers to the principal performer(s) of the activity of the game/sub-game.

4.1 Teacher and All Pupils. The speaker indicates that the agent will be the teacher and all the pupils.

Example

T/STR: Before we get into other things, let's talk about the quota for just a moment as this is, or can be, much more severe than a tariff.

4.2 All Pupils. The speaker indicates that the agent will be all the pupils of the class.

Example

T/STR: ...So tomorrow you will be tested as a post-war, I guess would be right, as a post-test to compare with the results of the pre-test of last Friday....

4.3 Some Pupils. The speaker indicates that the agent will be several pupils.

Example

T/STR: This naturally leads us to another area that we pick up. I think we have another group -- series of projects tomorrow -- reports on the Common Market.

4.4 Pupil. The speaker indicates that the agent will be one pupil.

Examples

T/STR : Linda, I know your report is ready and I'm going to let you give it for all of the class in a minute.

P/STR-A: I'll give you a definition of the Balance of Payments. The Balance of Payments is actually a table of all the economic transactions which a country's citizens and businesses and governments have with the rest of the other countries during a certain year.

4.5 Teacher. The speaker indicates that the agent will be the teacher.

Example

T/STR: I'm going to read from the book a paragraph concerning the similarities of domestic and international trade....

4.6 Teacher and Pupil. The speaker indicates that the agent will be the teacher and one pupil.

Example

T/STR: Let me steer you in the right direction -- since this is your report, I will ask you questions about it.

4.7 Teacher and Some Pupils. The speaker indicates that the agent will be the teacher and several pupils.

Example

T/STR: Now while the boys are working on the affirmative, I'll work with the girls on the negative and then we'll switch.

5. Topic. Topic refers to the subject matter of the discourse. There are two types of topics, substantive and instructional.

    5.1 Substantive Topic. Substantive topics refer to the subject matter under study by the class. See Appendix A, pp. 198-200, for the categories of substantive topics.

    5.2 Instructional Topic. Instructional topic refers to matters pertaining to classroom management, assignments, materials, and procedures. Since the results of phase one indicated that structuring moves dealt almost exclusively with the categories of assignments, materials, and procedures, the remaining categories have been grouped together as one. See Appendix A, pp. 205-208, for the categories of instructional topic.

6. Logical Process. Logical process refers to the cognitive activities involved in dealing with the topic under study. See Appendix A, pp. 200-205, for description of logical process.

7. Time. This category refers to the beginning point or the duration of the game/sub-game.

    7.1 Beginning Point. Beginning point refers to the time the game or sub-game is to commence.

        7.11 Present. The speaker indicates that the game or sub-game will begin imminently.

        Example

        T/STR: Perhaps now in the minute or two that we have left we might talk about one of the important aspects of world trade and that is tariffs.

        7.12 Future-This Session. The speaker indicates that the game or sub-game will begin some time in the future during the session under way.

        Example

        T/STR: The summaries will be picked up at the end of the period.

7.13 Future-Other Sessions. The speaker indicates that the game or sub-game will begin during a subsequent session of the unit of study.

Example

T/STR: It's actually carried out under huge, under monetary controls systems within each of the countries. We'll get into this more on Wednesday.

7.14 Future-Unspecified. The speaker indicates that the game or sub-game will begin at an unspecified time in the future during the current unit of study.

Example

T/STR: ...and we'll come back to tariffs later when we talk about tariff history and policy of the U.S. or rather survey it rapidly.

7.15 Future-Out of Class. The speaker indicates that the sub-game will begin sometime in the future during the unit, but outside of class rather than during a class session.

Example

T/STR: Now what you will be doing at home tonight is reading these four chapters on international trade and tomorrow we'll....

7.16 Future-Extra Unit. The speaker indicates that the sub-game will begin some time during a future unit of study.

Examples

T/STR: ...and next week we will discuss more of them.

T/STR: We want to take the remaining few minutes here to just briefly look at the policy toward underdeveloped areas without going into them specifically, which we will do at a later date (this is near the end of the last session of this unit.)

7.2 Duration. Duration refers to the length of time the game/sub-game is to continue.

7.21 Unit. The speaker indicates that he is structuring for the entire unit of study (for this research, a series of four sessions on international trade).

Examples

T/STR: Now what we're going to do this week is to study the topic "International Trade"....

T/STR: All right now, this is basically the outline we'll be following, oh for the rest of the week on our unit on international trade. As you see, Topic I: The Nature and Importance of Trade, this is what we'll....

7.22 Sessions. The speaker indicates that the game or sub-game will continue for more than one session during the unit of study.

Example

T/STR: ...For the rest of the week (three more days) I hope that you will be doing all of the talking and that I will merely ask questions designed to stimulate discussion of the different chapters that we will take up.

7.23 Session. The speaker indicates that the game or sub-game will continue for an entire session during the unit of study.

Example

T/STR: ...Now what I want to do this period in the way of introduction is to relate this topic of international trade with some of the work we've already covered in class....

7.24 Segment. The speaker indicates that the sub-game will continue for a part of a session during the unit of study. The speaker indicates the duration explicitly or through the context of the discourse.

Example

T/STR: Perhaps now in the minute or two that we have left we might talk about one of the important aspects of world trade and that is tariffs.

7.25 Unspecified. The speaker does not specify how long the game or sub-game will continue and the context of the discourse gives no clue about the duration.

Examples

T/STR: ...and we'll come back to tariffs later when we talk about tariff history and policy of the U.S. or rather survey it rapidly.

T/STR: Now what you will be doing at home tonight then is reading these four chapters on international trade and tomorrow we'll....

8. Regulations. Regulations refer to the rules by which the game or sub-game is played. The regulations fall under the general headings of scope, time sequence, mental associations, and administration.

Scope refers to the breadth of the topic under study, i.e., what shall be included in the subject matter under discussion. Time sequence refers to the order in which the game/sub-games are to occur; e.g., if two sub-games are launched at the same time, which is to begin first. Mental associations refer to what the participants are to do mentally as the game/sub-game proceeds, e.g., the participants are to "take mental notes" and draw connections between ideas. Administration refers to the use of certain materials, the role of participants, and other technical aspects of the game/sub-game.

Examples

T/STR: As we look at our papers that we prepared for today, we have here in a more formal way some of the things we discussed before lunch, only we are getting to more specific details. For example, question one wants to know what is domestic trade and why is it necessary, if so.... (scope)

T/STR: ...Now there are a series of questions that I wanted to be answered on the basis of those two films. Basically, number one, the first one, "The Living Circle." (Time Sequence)

T/STR: ...so as I explain our imports follow along on that chart and keep in mind the relation to exports and foreign investments. Now the U.S. imports.... (Associations)

T/STR: So that you'll have a test on this tomorrow and that will be conducted by Dr. Davitz and not me...you of course should not be alamed by the fact that there will be a test. This will certainly count on your grade. (Administration)

9. Instructional Aids. This category refers to the materials used in playing the game/sub-game.

9.1 Textbook for the Unit of Study.

Example

T/STR: Can we speak of multilateral trade. Multilateral Trade. And I think the diagrams in the text clearly show you how this works.

9.2 Charts; Graphs; Tables.

Example

T/STR: Now, take population itself on the graph I have right up here is to help you to analyze population. You see you can speak of China with 700 million people, around 650 million people, but the employment, the use of these people....

9.3 Maps; Globes.

Example

T/STR: Let's look at the world and see if we can get some oversimplification. It has been described as a ball which if you cut in half, a ball that oh at certain parallels, you get a sharp distinction. Now for arguments sake, I have cut this globe at 30° parallel.

9.4 Books Other Than Textbooks: Magazines, Dictionaries, Encyclopedias, Other Reference Materials.

Example

T/STR: ...Adam Smith put this out in a large degree in his book, The Wealth of Nations, in 1776 in which he was talking about specialization for example in the manufacture of pins....

9.5 Films; Film Strips; Recordings.

Example

T/STR: ...Now there are a series of questions that I wanted to be answered on the basis of those two films. Basically, number one, the first one, "The Living Circle."

9.6 News Media Such As Newspapers, Radio and Television.

Example

P/STR: Last night on the news, you know that organization that sends Negroes up to Washington....

9.7 Field Trips; Interviewing People Out of Class.

Example

T/STR: ...And then allow you to give your individual reports based on personal interviews hoping that as you report on your personal interviews some of the things that we have been talking about for the last three or four days -- and even before -- will have more meaning to us....

9.8 Homework Papers and Assignments; Notes on Readings and Class Discourse.

Example

T/STR: As we look at our papers that we prepared for today, we have here in a more formal way some of the things we discussed before lunch, only we are getting down to more specific details. For example, question one wants to know what is domestic trade and why is it necessary, if so,...

9.9 Classroom Prepared Material Such As an Outline, Dittoed or Mimeographed Sheets, Writings on the Chalkboard.

Example

T/STR: Someone mentioned the word profit before. Maybe it was me. I think perhaps we can illustrate one of the reasons as to why we trade by an example on the board. You people....

9.10 Other Resources, Both Human and Material.

Example

T/STR: ...but you go down on Route I to North Bergen. What do you see? A great big red, white and blue sign "Buy American. Protect Your Job." We don't see....

10. Reason. Reason refers to justification or explanation for the game/sub-game or for one or more of the dimensions of the game/sub-game.

Examples

T/STR: Let's go back to Cuba because that was the most outstanding example recently.

T/STR: This whole story of cars is interesting. Let's take a look at sports cars. The U.S. could probably build all the cars it needs if it wanted to.

T/STR: Now we say that there are certain factors that enter into the question of production. And this concept that we are getting into is a very important one.

Summary of Coding System

(1) Function: reference to the central purpose of the structuring component as it affects the game/sub-game.

Launching: launches the game/sub-game along a specified course.
Halting-Excluding: halts or excludes the game/sub-game.

(2) Method: reference to how speaker performs the functions indicated in (1).

Announcing: give public notice about dimensions of the game/sub-game.
Stating Propositions: defining, interpreting, fact stating, explaining, opining or justifying topic under study.
Announcing and Stating Propositions: combines both methods stated above.

(3) Activity: refers to oral and non-oral activities of teachers and pupils.

General-oral
Questioning-Answering
Reporting
Debating
Viewing/Listening to Audio-Visual Device
Holding a Panel Discussion
Following Up a Formal Presentation
Reading and/or Reading and Note Taking
Taking an Examination
Writing
Voting
Giving Instructions
Meeting in Small Groups
Taking Attendance
Reviewing
Taking a Field Trip
Non-Language Routine

(4) Agent: refers to the principal participant(s) of the activity.

Teachers and Pupils
All Pupils
Some Pupils
Pupil
Teacher
Teacher and Pupil
Teacher and Some Pupils

(5) Topic: refers to the subject matter of the game/sub-game, either substantive or instructional.

Substantive: refers to the subject matter under study.
Instructional: matters pertaining to classroom management, assignments, materials, or procedures.

(6) Logical Process: refers to cognitive processes involved in dealing with the subject matter under study.

(7) Time: refers to when the game/sub-game is to commence and how long it is to continue.

- Beginning Point
  - Present
  - Future-This Session
  - Future-Other Session
  - Future Unspecified
  - Future-Out of Class
  - Future-Extra Unit
- Duration
  - Unit
  - Sessions
  - Session
  - Segment
  - Unspecified

(8) Regulation: refers to the rules by which the game/sub-game is played; concerns scope, time sequence, associations, and administration.

(9) Instructional Aid: refers to materials used in playing the game/sub-game.

- Textbook
- Charts, Graphs, Tables
- Maps, Globes
- Other Books and Reference Materials
- Films, Recordings
- News Media (newspapers, radio, television)
- Field Trips
- Homework Papers and Assignments
- Classroom Prepared Material

(10) Reason: refers to justifications or explanations for the game/sub-game.

Coding Procedure

The following procedure was used in coding the data: (a) each of the 60 protocols was first coded by one coder; (b) this initial coding was then reviewed by a second person who noted his disagreements with the first coder; (c) finally, these disagreements were arbitrated by two coders, the original coder and a third coder who had not been involved in coding the protocol. This procedure resulted in a consistently high level of reliability in coding.

Reliability Test

Although preliminary tests conducted during the course of developing the content analysis system had indicated high agreement between coders, it was necessary to test the reliability of the final system of analysis to obtain a quantitative estimate of the degree of reliability for each of the major kinds of meaning considered in the research.

Three members of the research staff participated in the reliability test. Two protocols were selected at random from each of five randomly selected teachers. Randomly selected groups of nine structuring moves each from the beginning, middle, and end of the sessions were taken from the ten protocols. This yielded a random, balanced sample of over ten per cent of all structuring moves. The three coders were divided into teams, one of which consisted of two coders and the other of a single coder. Assignment of coders to the two coding teams was rotated so that all possible permutations of pairs and singles were compared. Following the general procedure for analysis, one member of the pair coded a given sample; the other member reviewed the coding; then both members of the pair arbitrated disagreements between initial coder and the reviewer. The single member "team" performed each step in the coding procedure by himself.

After each of the ten samples had been coded independently by the two teams, the codings of the teams were compared and the percentage of the agreement between teams in terms of frequency for each major category was computed. The results as presented in Table 13 indicate a consistently high degree of reliability for all major categories of analysis: agreement ranged from 86 to 100 per cent.

RESULTS

This section presents a description of structuring moves in the classrooms studied. The data are presented in terms of the role of structuring moves in the discourse and in terms of the various dimensions of directive meaning conveyed

TABLE 13

PERCENT OF AGREEMENT AMONG CODING TEAMS IN THE CONTENT ANALYSIS OF STRUCTURING COMPONENTS

Category	Percent of Agreement
Number of Components in Move	96.6
Function	100.0
Method	99.1
Activity Announced	96.6
Agent Announced	98.3
Duration of Time	97.4
Beginning Point in Time	97.4
Substantive Topic Announced	94.1
Instructional Topic Announced	100.0
Logical Process Announced	92.3
Substantive and Substantive-Logical Meanings Stated	99.1
Reason Giving	98.6
Regulations	89.8
Instructional Aids	86.4

in structuring moves. For the most part, the data are summarized for all 15 classes combined over the four sessions; in some instances, for purposes of comparison among classes, data are presented for each of the 15 classes.

Role of Structuring Moves in the Discourse

As indicated in Chapter 2, structuring moves represent a smaller proportion of the discourse in the 15 classrooms than any of the other three types of moves: structuring accounts for only 5.5 per cent of all moves and 18.1 per cent of all lines spoken. Although the teacher, the pupil and audio-visual devices speak structuring moves, the teacher controls the structuring move: the teacher is responsible for 86 per cent of the structuring moves, while the pupil speaks only 12 per cent, and audio-visual devices two per cent.

Teacher's Role.

Although the teacher speaks 86 per cent of all structuring moves, structuring moves account for only a small proportion of the moves by the teacher. The data in Table 14 indicate that the median percentage of teacher moves devoted to structuring is 7.5 per cent, with a high of 18.3 per cent in Class 9 and a low of 1.8 per cent in Class 13. Eight teachers are clustered between 6.1 and 8.8 per cent.

If these data are considered in terms of lines spoken, structuring accounts for a much greater percentage of the teacher's discourse. This is to be accounted for by the fact that structuring moves are generally longer than other types of moves. (The mean length of structuring moves is 9.1 lines of typescript, in contrast to 3.5 lines for reacting, 2.0 lines for responding and 1.9 lines for soliciting.) The median percentage of lines devoted to structuring is 17.2 per cent, with a wide range from 50.4 per cent in Class 9 to 2.4 per cent in Class 13. The two teachers at the extremes of the distribution are markedly different from the other 13 teachers who range from 33.4 to 9.7 per cent.

Pupil's Role.

Structuring accounts for a smaller proportion of pupil activity than of teacher activity. As indicated in Table 14, the median percentage of pupil moves devoted to structuring is 1.6 per cent, with a range from 5.4 per cent in Class 7 to zero in Classes 9 and 10. Self-initiated structuring represents only one per cent of all pupil moves, and assigned structuring moves (STR-A), which include activities such as reporting and debating assigned by the teacher, account for less than one per cent. In two classes there is no pupil structuring whatsoever, and in only eight classes are there assigned structuring moves.

If these data are considered in terms of percentage of lines, the picture is somewhat different. The median percentage of pupil lines devoted to structuring

TABLE 14

PERCENTAGE OF THE TEACHERS' AND PUPILS' MOVES AND LINES DEVOTED TO STRUCTURING, FOR EACH OF THE FIFTEEN CLASSES AND FOR ALL CLASSES COMBINED

Class	Teacher		Pupil	
	Moves	Lines	Moves	Lines
All Combined	7.7	20.1	1.8	11.1
1	4.5	9.7	1.3	1.7
2	7.5	17.1	1.7	2.0
3	10.2	14.2	4.4	21.9
4	6.7	10.0	1.7	13.4
5	8.8	24.4	3.4	15.7
6	6.1	20.1	0.5	0.2
7	11.9	33.4	5.4	20.4
8	6.2	11.7	0.7	1.0
9	18.3	50.4	0	0
10	8.8	24.1	0	0
11	12.7	30.0	3.2	38.9
12	12.5	32.0	0.5	12.0
13	1.8	2.4	1.0	2.4
14	7.3	11.1	2.3	22.9
15	6.2	14.3	1.6	10.8

is 10.8 per cent, with a range from 38.9 per cent in Class 11 to zero in Classes 9 and 10. Class 11 is considerably different from the other classes, in that pupils in this class devote almost two-fifths of their lines to structuring. This difference is to be accounted for by the fact that lengthy pupil reports and debates, classified as STR-A, are assigned by the teacher in this class.

Relation to Other Moves. According to the system for analysis, any type of move may follow a structuring move in the discourse. The data in Table 15 indicate, however, that certain types of moves tend to follow structuring moves by the teacher and by the pupil. For example, after the teacher structures, the probability is nine to one that the teacher will speak the following move. Furthermore, the following move is most likely to be a teacher solicitation: 83.9 per cent of the moves following a teacher structuring move are teacher solicitations. In contrast, after the pupil structures, the probability is only three in ten that the pupil will speak the following move, and the most common pupil move following a pupil structuring move is a solicitation. It is the teacher who is more likely to speak after the pupil structures, and most frequently the following teacher move is a reaction: teacher reactions follow 49.0 per cent of all pupil structuring moves. In summary, a teacher solicitation tends to follow a teacher structuring move, and a teacher reaction tends to follow a pupil structuring move.

Single and Multiple Component Moves

According to the system for analysis, speakers may structure the game as a whole and/or one or more sub-games in a structuring move, and each game or sub-game is described in a component of the move. Single component moves (i.e., moves that present one set of directives for the entire game or a single sub-game) are by far the most common; 85 per cent of the structuring moves are one component moves, and the teacher speaks 85 per cent of these moves. Fifteen per cent of the structuring moves are multiple component moves that present more than one set of directives, and virtually all of these are spoken by the teacher.

Function and Method

Speakers of structuring moves set the content for classroom interaction by performing two basic functions: launching and halting-excluding the game or sub-games. Data in Table 16 indicate that speakers perform the function of launching much more frequently than they perform the function of halting-excluding. In 95.4 per cent of all structuring components, speakers launch the game or sub-games; in contrast, in only 4.6 per cent do the speakers halt-exclude the game or sub-games.

TABLE 15

FREQUENCY DISTRIBUTION OF MOVES AND SPEAKERS FOLLOWING TEACHER, PUPIL, AND AUDIO-VISUAL DEVICE STRUCTURING MOVES

Prior Structuring	Following Move and Speaker						
Move and Speaker	Total	T/STR	P/STR	P/STR-A	A/STR	T/SOL	P/SOL
Total	854	38	2	4	1	641	56
T/STR	737	37	2	2	1	618	30
P/STR	62	0	0	0	0	13	21
P/STR-A	42	0	0	2	0	9	5
A/STR	13	1	0	0	0	1	0

(Table continued on next page)

TABLE 15 (continued)

FREQUENCY DISTRIBUTION OF MOVES AND SPEAKERS FOLLOWING TEACHER, PUPIL, AND AUDIO-VISUAL DEVICE STRUCTURING MOVES

Prior Structuring Move and Speaker	Following Move and Speaker						
	T/RES	P/RES	T/REA	P/REA	T/NOC	P/NOC	None
Total	0	2	63	25	0	7	15
T/STR	0	1	2	23	0	7	14
P/STR	1	0	26	1	0	0	0
P/STR-A	0	0	25	1	0	0	0
A/STR	0	0	10	0	0	0	1

TABLE 16

PERCENTAGE DISTRIBUTION OF STRUCTURING COMPONENTS ACCORDING TO FUNCTION AND SPEAKER FOR EACH OF THE FIFTEEN CLASSES AND FOR ALL CLASSES COMBINED

Class	Total	Teacher		Pupil	
		Launching	Halting-Excluding	Launching	Halting-Excluding
All Combined	100.0	85.2	4.6	10.2	0
1	100.0	86.2	0	13.8	0
2	100.0	85.7	4.2	10.1	0
3	100.0	78.0	5.5	16.5	0
4	100.0	84.0	6.0	10.0	0
5	100.0	80.4	4.1	15.5	0
6	100.0	96.8	0	3.2	0
7	100.0	76.5	6.4	17.1	0
8	100.0	90.2	3.8	6.0	0
9	100.0	89.0	11.0	0	0
10	100.0	91.0	9.0	0	0
11	100.0	88.1	1.0	10.9	0
12	100.0	94.6	2.7	2.7	0
13	100.0	73.5	2.9	23.6	0
14	100.0	88.1	0	11.9	0
15	100.0	82.9	5.3	11.8	0

Launching is primarily the function of the teacher rather than the pupil. The teacher speaks 85.2 per cent of all structuring components; in contrast, the pupil speaks only 10.2 per cent. The range for the teacher is from a high of 96.8 per cent in Class 6 to a low of 73.5 per cent in Class 13, with a median of 86.2 per cent. The range for the pupil, on the other hand, is from 23.6 per cent in Class 13 to zero in Classes 9 and 10, with a median percentage of 11.8 per cent.

Halting-excluding is strictly a function of the teacher; in no class does the pupil perform this function. When the teacher does halt or exclude a sub-game, he usually does so in a multiple component move in which he also launches a new sub-game. More frequently, however, the teacher does not explicitly halt or exclude sub-games; rather, he signals the end of one sub-game by launching a new sub-game.

Speakers perform the function of launching by using one of three methods: announcing, stating propositions or announcing and stating propositions. As shown in Table 17, the most frequent method is announcing; that is, giving public notice about one or more dimensions of the game or sub-game. Speakers launch by announcing in 45.2 per cent of all structuring components, by announcing and stating propositions in 34.1 per cent and by stating propositions in only 16.1 per cent.

The teacher and the pupil differ in the methods by which they launch. While the teacher launches by announcing in 46.9 per cent of his components, the pupil launches by this method in only 31.1 per cent of his components. Whereas launching by stating propositions occurs in only 12.3 per cent of the teacher's components, the pupil launches by this method in 49.1 per cent of his components. While the teacher uses the method of announcing and stating propositions in 35.7 per cent of his components, the pupil uses this method in only 19.8 per cent of his components.

The data also indicate that the pupil uses a different method in announcing self-initiated structuring moves than he uses in announcing assigned structuring moves. In pupil self-initiated structuring the most common method is announcing, while in assigned structuring the most frequent method is stating propositions.

Activity

In structuring the game or a sub-game, the speaker usually announces the type of activity (e.g., general oral activity, debating, reporting, questioning-answering) in which participants are to engage. In 61.7 per cent of all components the speaker announces an activity. The range of activities announced in the classrooms studied is indeed limited, as shown in Table 18. General-oral

TABLE 17

DISTRIBUTION OF STRUCTURING COMPONENTS BY FUNCTION AND METHOD OF STRUCTURING, FOR TEACHER AND PUPIL

Function and Method	Total		Teacher		Pupil	
	%	f	%	f	%	f
Launching	95.4	986	94.9	880	100.0	106
Announcing	45.2	468	46.9	435	31.1	33
Announcing and Stating Propositions	34.1	352	35.7	331	19.8	21
Stating Propositions	16.1	166	12.3	114	49.1	52
Halting-Excluding	4.6	47	5.1	47	0	0
Total	100.0	1033	100.0	927	100.0	106

TABLE 18

DISTRIBUTION OF STRUCTURING COMPONENTS BY ACTIVITY ANNOUNCED, FOR TEACHER AND PUPIL

Activity Announced	Total		Teacher		Pupil	
	%	f	%	f	%	f
General Oral	61.4	391	65.1	389	5.1	2
Reporting	8.5	54	7.0	42	30.7	12
Questioning-Answering	7.7	49	4.3	26	59.0	23
Reviewing	3.9	25	4.2	25	0	0
Taking Examination	3.8	24	4.1	24	0	0
Debating	2.7	17	2.8	17	0	0
Non-language Routine	2.5	16	2.7	16	0	0
Reading	2.2	14	2.3	14	0	0
Following Up Presentation	2.0	13	2.0	12	2.6	1
Viewing/Listening to Audio-Visual Devices	1.5	10	1.7	10	0	0
All Others	3.8	24	3.8	23	2.6	1
Total	100.0	637	100.0	598	100.0	39

activity, which accounts for 61.4 per cent of all activities announced, is by far the most common. Speakers indicate that the activity will be general-oral in nature (i.e., will involve "talking") by using such cues as "Let's now discuss...", or "Let's go into...", or "Let's take up...." Inspection of the protocols reveals that general-oral activity most often is a verbal interchange between the teacher and pupils, usually involving soliciting and responding, with the teacher playing the most active role. The data show that the other types of activities account for much smaller percentages. Reporting and questioning-answering, which account for only 8.5 per cent and 7.7 per cent, respectively, are the second and third most frequently announced activities. Actually, questioning-answering accounts for a much larger percentage of the activities, since, as already indicated, general-oral activity turns out to be essentially a soliciting-responding interchange. Thus, three types of activities -- general-oral, reporting, and questioning-answering -- account for three-fourths of all activities announced. None of the other types of activities accounts for more than 3.9 per cent.

Announcing activities is clearly the responsibility of the teacher, as indicated by the fact that he announces 93.4 per cent of all activities. General-oral activity, accounting for almost two-thirds of the activities the teacher announces, is the most frequent. The pupil limits his very infrequent announcing of activities to announcing reporting and questioning-answering. In announcing the latter, he usually follows a standard procedure: he first structures by announcing, "I have a question," and then proceeds to address his solicitation directly to the teacher.

Agent

In launching the game or a sub-game, the speaker usually designates the agent(s) who are to participate in the activity announced. In only six per cent of the structuring components in which activities are announced are the participants not specified. This is in accordance with expectations, since the various types of classroom activities by their very nature call for the involvement of certain participants; for example, debating usually involves some pupils in the class, taking an examination involves all pupils, and questioning-answering and general-oral activity ordinarily involve the teacher and all pupils.

Table 19 illustrates this pairing of activities and agents. Since general-oral activity is the activity that occurs most frequently, it is not unexpected that the teacher and all pupils are designated the participants in two-thirds of the components in which activities are announced. In contrast, in only one-fifth of the components are pupils without the teacher announced as the participants for such activities as debating, reporting and taking examinations -- all of which are pupil activities assigned by the teacher. It is therefore clear that

TABLE 19

FREQUENCY DISTRIBUTION OF STRUCTURING COMPONENTS ACCORDING TO ACTIVITY AND AGENT ANNOUNCED

		Agent					
Activity	Total	Teacher and all Pupils	All Pupils	One or More Pupils	Teacher	Other	None
General Oral	391	363	2	0	0	2	24
Reporting	54	0	0	34	20	0	0
Questioning-Answering	49	22	0	0	0	27	0
Reviewing	25	15	0	0	0	0	10
Taking Examination	24	0	24	0	0	0	0
Debating	17	0	0	15	0	0	2
Non-language Routine	16	0	13	1	2	0	0
Reading	14	2	6	2	4	0	0
Following Up Presentation	13	6	4	1	1	0	1
Viewing/Listening to Audio-Visual Devices	10	6	0	3	0	0	1
All Others	24	1	6	8	9	0	0
Total	637	415	55	64	36	29	38

teachers not only participate directly in most classroom activities, but they also take responsibility for planning and assigning those activities in which they do not take an active role. In none of the classes are outside speakers announced as participants.

Announcing Topic and Logical Process

In three-fourths of all structuring components speakers announce the substantive or instructional topics that are to be studied or discussed in the game or sub-game. Almost all of the 769 topics announced deal with the subject matter of international trade. Only nine topics deal with instructional matters such as examinations and routine classroom management problems. It is the teacher's responsibility to announce the topics for study or discussion, as indicated by the fact that the teacher announces 95 per cent of all topics.

It is not uncommon for a speaker to launch the game or a sub-game by announcing a topic, without specifying the activity to be engaged in; this occurs in 22 per cent of all structuring components. More frequently, in 52 per cent of the components, a topic is announced along with an activity -- for example, a debate on the Common Market, a general oral discussion on Canadian-United States trade, or an examination on the unit of international trade.

As shown in Table 20, trade (TRA), the most general of all topics included in the unit on international trade, is announced most frequently: in almost two-fifths of the components in which a topic is announced, the speaker indicates that trade (i.e., general economic principles of trade) will be the focus of attention. This finding is in line with results of the first phase of the research which revealed that trade was the topic most frequently discussed in the classrooms studied. In contrast with the results of the first phase in which promoting free trade (PFT) ranked fourth among the substantive topics discussed, promoting free trade ranks second among the topics announced. The difference is to be explained by the fact that most of the debates, films and reports deal with problems relating to the promotion of free trade, and these activities are usually announced in structuring moves.

Classes show marked differences in the substantive topics announced. For example, in Class 15 the topic trade is announced only eight times, while in Class 8 it is announced 28 times. Promoting free trade is announced 26 times in Class 6, but only once in Class 15. Similarly, barriers to trade (BAR) is announced as the topic only once in Class 1, but 15 times in Class 7.

These findings are consistent with results of the first phase of the research which indicated that classes showed marked differences in the substantive material covered in the class sessions; of all the categories of analysis, classes varied most

TABLE 20

FREQUENCY DISTRIBUTION OF STRUCTURING COMPONENTS ACCORDING TO SUBSTANTIVE TOPIC ANNOUNCED FOR EACH CLASS AND FOR ALL FIFTEEN CLASSES COMBINED

Class	TRA	FSP	IMX	FOR	BAR	PFT	REL	NTR
Total	289	69	61	63	103	127	30	18
1	17	4	1		1	3	1	
2	23	8	1	3	13	6	2	2
3	13	6	4	5	6	2		1
4	27	2	3	10	12	18	1	
5	15	3	11	1	3	17		
6	20		12	2	9	26	1	7
7	19	6	7	14	15	5	7	1
8	28	16	8	5	5	9	6	
9	16	4	3	2	7	7		
10	25	1		1	8	3	5	3
11	19	2	3	4	3	6	1	1
12	23	10	1	2	5	4	4	
13	22	2	4	3	2	2		
14	14	2	2	8	11	18	2	1
15	8	3	1	3	3	1		2

in the substantive meanings expressed. This finding was not anticipated in view of the fact that the major restriction imposed on teachers by the research procedure was the specification of the substantive material to be taught. The 15 teachers, given the same teaching unit to be taught during the four class sessions, might reasonably be expected to deal with the various topics on international trade in about the same proportions; but this was not the case, as demonstrated by the findings of both phases of the research. The differences among the classes in substantive topics announced and discussed, especially when one considers the similarities found in the pedagogical patterns of the discourse, are remarkable.

In about 20 per cent of the components in which the speaker announces a topic, he also specifies the logical process with which participants are to deal with the topic. This is illustrated in the following example from one of the protocols:

> T/STR: Well, now that we've got the facts on the Common Market, let's now take up the reasons why we should or should not join.

In this instance, the teacher announces the topic promoting free trade and indicates that the class will consider reasons for and against our joining the Common Market; that is, the discussion will involve giving reasons for opinions on the issue (logical process: justifying). The teacher and not the pupil is primarily responsible for announcing logical processes.

Time: Beginning Point and Duration

In launching the game or a sub-game, the speaker gives an indication of its beginning point (i.e., whether it is to get under way immediately or at some future time) and its duration (i.e., whether it will continue for the unit, session(s) or segment of a session). Data presented in Table 21 indicate that in 80 per cent of all launching components, speakers launch sub-games to begin immediately and to continue for only a segment of a session. This means that, for the most part, classes are structured as they move along from sub-game to sub-game within a session. In only 6 per cent of the launching components do speakers launch a sub-game to begin later in an ongoing session. This means that only infrequently are participants given advance notice regarding sub-games that will take place subsequent to the ongoing sub-game.

While both the teacher and the pupil launch sub-games for the present (although, as previously reported, launching is primarily the teacher's responsibility), only the teacher launches for the future. Never does the pupil announce a sub-game that will begin at some future time, not even later during an ongoing session.

TABLE 21

FREQUENCY DISTRIBUTION OF LAUNCHING COMPONENTS ACCORDING TO BEGINNING POINT IN TIME AND DURATION

Beginning Point in Time	Total	Duration				
		Segment	Session	Sessions	Unit	Unspecified
Total	986	868	37	3	16	62
Present	818	787*	14	2	15	0
Future	168	81	23	1	1	62
Future This Session	60	59	0	0	1	0
Future Other Session	62	21	23	1	0	17
Future Unspecified	46	1	0	0	0	45

* Includes all 106 pupil components

In only 14 structuring components spoken at the beginning of class sessions do teachers launch sub-games for these sessions. These 14 components are spoken by only 10 teachers. Interestingly enough, there are more instances of teachers structuring subsequent sessions: 23 teacher components, usually spoken near the end of a session, launch sub-games for the following day's session. All but 3 of the teachers launch for at least one subsequent session in this manner. Sixteen structuring components that launch the game as a whole for the duration of the entire unit occur in the discourse, and these 16 components are spoken by 11 of the 15 teachers. It is interesting to note that in one class (Class 10) the teacher structures neither for the unit as a whole, nor for any one of the four sessions; structuring in this class is confined to launching sub-games for segments within the class sessions.

Regulations

The data indicate that it is the teacher's responsibility to cite regulations concerning the scope, time sequence, mental associations and administration of the game and sub-games. Of the 247 structuring components in which regulations are given, 243 are spoken by the teacher; this means that the teacher cites regulations in about one-fourth of his structuring components. It is clearly not the job of the pupil to set forth regulations that participants must follow in playing the classroom game.

Instructional Aids

The teacher uses or calls for the use of instructional aids in one-third of his components. In contrast, the pupil uses or calls for the use of instructional aids in over one-half (57.5 per cent) of his components. The high percentage for the pupil is to be accounted for by the fact that the coding rules specify that in assigned structuring components (STR-A) homework is to be coded if no other instructional aid is specifically mentioned. Inspection of the coded protocols reveals that homework is coded in 22 of the 42 assigned structuring components by the pupil. Without these, the percentage for the pupil is 36.8, which is similar to the percentage for the teacher.

The data indicate that the most commonly used resource is the textbook, which is mentioned in one-fourth of all components in which the speaker specifies instructional aids. Reliance on the textbook is much greater than the data suggest, for "text" is coded only when the speaker explicitly calls for its use. Material such as dittoed outlines, the blackboard, charts, graphs, maps and films are also occasionally used by the teacher, but other than the textbook, the pupil makes use only of homework, news media and other printed references.

Reason Giving

The data indicate that it is clearly the teacher's job to give reasons for the game or sub-game and their various dimensions: the teacher speaks 212 of the 221 components in which reasons are cited. The median percentage of teacher structuring components that cite reasons is 23.9, with a range from 50.0 per cent for Teacher 6 to 9.9 per cent for Teacher 12. There seems to be a slight tendency for teachers who structure more frequently to cite reasons proportionately less often than teachers who do not structure as often.

Summary of Results

1. Structuring moves represent a smaller proportion of the discourse than any of the other three types of moves: structuring accounts for only 5.5 per cent of all moves and 18.1 per cent of all lines spoken.

2. Structuring moves play a more significant part in the teacher's discourse than they do in the pupil's discourse. Structuring accounts for 7.7 per cent of the teacher's moves and only 1.8 per cent of the pupil's moves. In terms of lines, structuring accounts for 20.1 per cent of the teacher's discourse and 11.1 per cent of the pupil's discourse.

3. Although any type of move may follow a structuring move, in the actual discourse certain types of moves tend to follow the structuring moves. A teacher soliciting move tends to come after a teacher structuring move and a teacher reacting move tends to come after a pupil structuring move.

4. Eighty-five per cent of the structuring moves are one component moves (i.e., moves that structure one set of directives for the game or a sub-game), of which the teacher speaks 85 per cent. Multiple component moves represent the remaining 15 per cent, and virtually all of these are spoken by the teacher.

5. Speakers perform the function of launching much more frequently than they perform the function of halting-excluding. In 95.4 per cent of all structuring components speakers launch the game or sub-game, while in only 4.6 per cent speakers perform the function of halting-excluding. For the teacher, the most common method for launching is announcing; for the pupil it is stating propositions. Launching is primarily the function of the teacher, while halting-excluding is exclusively a function of the teacher.

6. In structuring the game or a sub-game, the speaker usually announces the type of activity in which participants are to engage. Three types of activities -- general-oral, reporting and questioning-answering -- account for three-fourths of all activities announced.

7. The speaker usually announces the agent(s) who is to take part in the activity announced. The teacher and all pupils are designated the agents in two-thirds of components in which activities are announced.

8. In three-fourths of the structuring components speakers announce the topics that are to be studied or discussed. Virtually all topics announced are substantive rather than instructional. The most frequently announced topic is trade, and the second most frequently announced is promoting free trade. In about 20 per cent of the components in which the speaker announces a topic, he also specifies the logical process with which participants are to deal with the topic.

9. Most structuring components (about 75 per cent) launch sub-games to begin immediately and to continue for only a segment of a session. For the most part, classes are structured as they move along from sub-game to sub-game. Although both the teacher and the pupil launch sub-games for the present, this is primarily the teacher's responsibility. On occasion, teachers structure a sub-game or series of sub-games for a class session. About two-thirds of the teachers structure the game as a whole at the outset of the first session of the unit.

10. It is the teacher's job to cite regulations and give reasons for dimensions of the game or sub-game. Both the teacher and the pupil use or call for the use of instructional aids. The text, blackboard and teacher-prepared material such as dittoed outlines are the instructional resources most frequently used.

CHAPTER FIVE

THE REACTING MOVE

This chapter reports our investigation of the distinctive functions of reacting moves in pedagogical discourse and the ways in which teachers and students carry out these functions in the classroom. The first two sections describe the conceptual framework and the system for analysis derived from this framework; the third section presents a description of the reacting moves in the 15 classes studied.

CONCEPTUAL FRAMEWORK

In the theoretical view of classroom teaching as a language game, reacting is conceptualized as a reflexive move that is occasioned, but not directly called out, by a preceding move; the occasioning move may be a soliciting, responding, structuring, or another reacting move. For example, rating by a teacher of a pupil's responding move is designated a reacting move; that is, the student's responding move is the occasion for the teacher's reaction, but it does not elicit it.

Reacting As a Reflexive Move

Although both reacting and responding are reflexive moves with their pedagogical functions determined by relationships to preceding moves, there are significant differences between these two types of moves. Responding moves bear a reciprocal relationship to solicitations and occur only in relation to them; their pedagogical function in the discourse is to fulfill the expectation of soliciting moves. In contrast, reacting moves may be occasioned by any of the four types of moves; their pedagogical function is to rate (positively or negatively) and/or to modify (by clarifying, synthesizing or expanding) what was said in the moves that occasioned them. The following excerpts from the classroom protocols illustrate these distinguishing functions of reacting moves:

Example 1

Teacher (SOL):	What do we import from Denmark?
Pupil (RES) :	Modern furniture.
Teacher (REA):	Right, and it's some of the best designed furniture available anyplace in the world.

In this instance, the teacher reacts by rating positively the student's response and by adding relevant information and opinion.

Example 2

Pupil (SOL) : Why don't we raise our tariffs too?
Teacher (REA): That's a good question.

Here the teacher rates positively the solicitation by the pupil. Note that the reaction is a favorable comment regarding the nature of the question raised by the student and is not an answer to this question.

Example 3

Teacher (STR): All right, Standard Oil has a little extra money around, and they form a new company and they're going to call it Arabian American Oil Company.
Pupil (REA) : And the Shah of Arabia, whoever he is, gives them permission to drill on the land, and he also makes provisions that he is to get a certain amount of the profits, usually fifty per cent.

In this excerpt, the student reacts by elaborating the teacher's opening structuring move.

Example 4

Pupil (SOL) : How is it possible for a new nation to increase barriers?
Teacher (RES): Use any of these devices.
Pupil (REA) : But it has to have trade to survive. I don't see that.
Teacher (REA): All right, Ghana needs certain things. It wants to develop. All right, Ghana was mentioned before. It wants to industrialize. Now if Ghana doesn't use certain trade barriers, then she might import things, say from the United States - things we export from this country.

In this interchange, the pupil reacts by raising an objection to what the teacher said in response to his question. In turn, the teacher reacts by expanding and clarifying the point brought up by the student.

Reactions may be occasioned by a single move, as in the illustrations cited above, or they may be occasioned by more than one move, as shown in the following example:

Teacher (SOL): What are some of the Malaya's natural resources?
Pupil 1 (RES) : Tin
Pupil 2 (RES) : Rubber
Teacher (REA): The two main things that Malaya has are tin and rubber. Remember rubber and tin in Singapore...we said Malaya. And both these countries need these things for many many reasons. So that there is a reason for trade.

In this instance, the teacher reacts to the two pupils by repeating their answers, thus in effect rating their responses positively; in addition, he relates the students' comments to a previous class discussion. (The coding symbol is underlined to designate a reaction to more than one move.)

Another significant characteristic of reacting moves is that they may be occasioned by the "silent language" as well as by the verbal language of the classroom. Pauses occurring in the discourse and physical actions by participants may occasion reactions, as illustrated by the following excerpts from the transcripts:

Example 1

Teacher (SOL) : As a country, from day to day what are some of the things we do that are very definitely an indication of the fact that we do have a great deal of international trade?
(Pause in the discussion)
Teacher (REA-*): Now, you're looking at me but you don't seem to realize that I only want you to answer a question that is right in the chapter.

Here the teacher is reacting to the absence of an expected responding move. Prompted by puzzled expressions of the students, he reacts by giving them a clue where the information may be found. (The asterisk is added to the coding symbol to indicate a reaction occasioned by a pause in the discussion.)

Example 2

Teacher (SOL) : ...But are they? What are the farmer's products? Come on, some other hands!

Teacher (REA-P): Oh, they're too many here who are not saying a word.

In this excerpt, the teacher reacts to the failure of all but a few students to volunteer to answer his question. (The postscript -P indicates that this reaction is occasioned by a physical action.)

These seven examples from the protocols illustrate the flexibility and versatility that characterize the role of the reacting move in classroom discourse. Its flexibility is demonstrated by the fact that any verbal move, physical action, or pause in the discussion may serve as the occasion for a reaction. Its versatility is apparent in the variety of ways in which it may clarify, expand, synthesize, or rate what has been said in a preceding move. The possibility of reacting to a verbal action or a physical action at any point during the course of play means that participants may attempt to influence events in the classroom at the time and in the manner of their own choosing. The conditions under which it is considered appropriate for participants to react are determined, of course, by the rules of the game that specify the roles of the teacher and the pupil.

Types of Reacting Moves

According to the system for analysis developed during the first phase of the research, pedagogical moves are coded in terms of the substantive and instructional meanings expressed by teachers and pupils. In the excerpts cited above, speakers reacted by communicating both types of meanings. For example, when the teacher reacted positively to the student's question regarding tariffs (page 118), he was expressing instructional meanings; when the student reacted to the teacher's comments about the Arabian American Oil Company by adding supplementary information (page 118), he was conveying substantive meanings. Since meanings communicated in reactions are substantive and/or instructional in nature, it is appropriate to classify reacting moves into three basic categories: substantive, instructional, and substantive-instructional. Each of these three types serves different functions in the discourse.

Substantive Reactions. Reactions of this type express substantive and substantive-logical meanings related to the subject matter under discussion.*

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* See Appendix A, pp. 198-205, for definitions of substantive meanings and substantive-logical meanings.

Examination of the protocols reveals that in conveying these types of meaning, substantive reactions serve the function of modifying in some way substantive content discussed in occasioning moves. The following excerpts illustrate this distinctive function of substantive reactions:

Example 1

Pupil 1 (REA) : The U.S. consumer is looking for a lower priced article and the Japanese at this point are making lower priced articles that compete with the exact standards of GE or RCA or anyone in the special electronics fields.

Pupil 2 (REA): They make radios which are better up to a point.

Example 2

Teacher (STR): Now what I started to say I think is that some of us actually prefer foreign goods.

(SOL): Well, now give us a few things that have this glamorous appeal to American customers.

Pupil (RES) : Watches.

Teacher (REA): Now I thought we made plenty of watches in America.

Example 3

Teacher (REA): All of the instances of foreign investment that Ira and Mary have discussed can be classified in either direct or portfolio types of investment. Both types of investment are important when we talk about the ways in which the United States invests in other countries.

These examples illustrate the variety of ways in which teachers and students may use substantive reactions to clarify, expand, or synthesize statements of preceding speakers. In deciding when to react substantively, participants are limited by their knowledge of the subject matter under discussion and by the rules of the game that specify the circumstances under which teachers or pupils may suggest modifications of what preceding speakers have said.

Instructional Reactions. Reactions in this category express instructional and instructional-logical meanings concerned with the social-managerial aspects of the classroom.* In conveying meanings of these types, instructional reactions serve the pedagogical functions of (1) rating positively or negatively what was claimed in an occasioning move or (2) modifying in some way what was said about procedural matters in an occasioning move.

(1) Rating Reactions. The function of reactions of this type is to rate positively or negatively what is said in preceding moves. One may view rating reactions as metacommunications, since they are communications about previous communications, as illustrated in the following excerpts:

Example 1

Teacher (SOL):	Where do we get chicle?
Pupil (RES) :	South America.
Teacher (REA):	South America, yes; it's our great source of that.

Example 2

Teacher (SOL):	In what town in New Jersey, do you think you can remember?
Pupil (RES) :	Flemington.
Teacher (REA):	Flemington, New Jersey; all right.

Meanings expressed in rating reactions seem to be closely related both to "critical" meaning and to "evaluative" meaning, as defined by Wellman (16). Critical meaning refers to the use of language to qualify, accept, or reject the claim of a given statement to be rationally justified. "The claim to rationality," writes Wellman, "is the claim that one can support his assertion or actions with reasons, that he has not done violence to the opposing reasons, and that he recognizes the liability to be called before the court of reason." (16:258). Critical sentences are positive or negative, depending upon whether they uphold or reverse the claim they criticize. From this viewpoint, teachers and pupils express critical meanings when they rate what is said and done in the classroom. When a teacher says "That's correct" in reacting to a pupil's comment, he is in effect reaffirming the claim to rationality implicit in the student's statement.

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*See Appendix A, pp. 205-212, for definitions of instructional meanings and instructional-logical meanings.

Rating reactions may also be viewed as expressing evaluative meanings. According to Wellman, the central feature of evaluation is partiality. "To be partial, is to be pro or con....To evaluate anything is to place it on a scale ranging from good through indifferent to bad." (16:208,209). One may therefore interpret evaluative sentences as "putting attitudes into words." From this viewpoint, speakers of reacting moves express favorable or unfavorable attitudes when they rate what is said or done in the classroom. When a teacher says "That's a good answer" in reacting to a student's responding move, he is in effect communicating his attitude of approval of the student's answer.

Inspection of the protocols reveals that speakers of reacting moves, particularly teachers, frequently use such commonsense words as 'right,' 'wrong,' 'correct,' 'incorrect,' 'fine' and 'good' in rating what is said and done in the classroom. These words may, in a given reaction, express critical meanings and/or evaluative meanings. For example, when a teacher says "Right" in reacting to a student's response, it may be his intention either to communicate his approval of what the pupil said (evaluative meaning), or to reaffirm the claim to rationality implicit in the pupil's statement (critical meaning), or possibly to convey both types of meanings. In this phase of the research we interpret rating reactions as expressing critical and/or evaluative meanings, and we leave for future study experimental investigation of the distinctions between critical and evaluative meanings in classroom discourse.

(2) Procedural Reactions. Reactions of this type serve the functions of clarifying, expanding, or synthesizing what preceding speakers have said about procedural matters (assignments, examinations, materials, and classroom routines), as illustrated in the following three examples:

Teacher (REA):	Now this matter that I'm discussing at this moment will become increasingly important to you on Thursday this week when members of the class will make reports to you on the new trade policy that the U.S. is thinking of engaging in.
Teacher (REA):	We studied that just last week when we were talking about the New Deal.
Teacher (REA):	Well there seems to be about a two to one vote that you think it would be a good idea.

Substantive-Instructional Reactions. In the course of class discussion, speakers frequently express both substantive meanings and instructional meanings in a reacting move. For example, a teacher may in a reaction to a student's responding move not only rate positively or negatively what the pupil said, but also expand or clarify the substantive or instructional material discussed by the pupil. The following excerpt illustrates this type of reaction:

Teacher (SOL):	What countries belong to the Common Market?
Pupil (RES):	France.
Teacher (REA):	France. Right. And also Germany and Belgium.

On occasion, a speaker may include reference to both substantive and procedural matters in the same reacting move, as shown in the following example:

Teacher (REA):	We'll have a report later this period, John, that will help to explain the problem you have just mentioned. In connection with this, it's important to keep in mind that the countries in the Common Market are not in agreement on what should be done about it.

In this instance, the teacher not only attempts to clarify the substantive problem raised by the pupil, but also calls attention to a report that will further clarify the matter under discussion.

SYSTEM FOR ANALYSIS

This section presents the system for analyzing reacting moves based on the conceptual framework developed in the preceding section.

Part One: Definition of Reacting Move

1. Reacting Move (REA). Reacting is a reflexive pedagogical move that is occasioned by a structuring, soliciting, responding or another reacting move. Reactions are classified into three major categories: substantive, instructional, and substantive-instructional. Pedagogically, these moves serve to rate and/or to modify in some fashion what was stated in occasioning moves.

Reacting moves differ from responding moves in that while a responding move is always directly elicited by a solicitation, preceding moves serve only as the occasion for reactions. For example, rating by a teacher of a pupil's response is designated a reacting move; that is, the student's response is the occasion for the teacher's rating reaction, but it does not actively elicit the reaction.

1.1 Reacting (REA)

A reaction to a single occasioning move is coded REA, without underlining.

1.2 Reacting - Underlined (REA)

When the coding symbol is underlined (REA), it designates a reaction occasioned by more than one move.

1.3 Reacting - Physical (REA-P)

The postscript '-P' designates a reaction occasioned by a physical action rather than by a verbal action.

1.4 Reacting - Pause (REA *)

The asterisk designates a reaction occasioned by a pause or by the absence of an expected responding move.

Part Two: Types of Reacting Moves

1. Substantive Reactions are defined as (a) reactions that convey substantive meanings and associated substantive-logical meanings, and (b) reactions in the instructional and instructional-logical categories that are interpretations of preceding statements (code: statement/interpret STA/INT) and are therefore essentially substantive in nature. Substantive reactions serve to modify (by clarifying, synthesizing, or expanding) what was said substantively in the occasioning move.

Example

T/SOL: Now what kinds of capital are there? Paul?

P/RES: Machinery.

T/REA: Now he's using capital in terms of concrete things. You have a tractor; you have a machine. Some of you boys own automobiles. Actually you have capital. And other places might have capital simply in terms of money.

2. Instructional Reactions are defined as reactions that express instructional and associated instructional-logical meanings, with the exception of those coded STA/INT.

2.1 Rating Reactions are defined as instructional reactions that involve rating processes. Rating reactions serve the pedagogical function of rating the truth or falsity or the appropriateness or inappropriateness of what was said in the occasioning move.*

2.11 Positive

Distinctly affirmative rating (e.g., yes, right, correct, exactly, precisely).

2.12 Admitting

Mildly accepting or equivocally positive rating (e.g., all right, o.k., uh-huh).

2.13 Repeating

Implicitly positive rating in which there is only a repetition, rephrasing, or restatement of the occasioning move, with no explicit rating.

2.14 Qualifying

Any indication of reservation, however mild or oblique (e.g., yes, but...; however).

2.15 Not Admitting

Rating that rejects by stating the contrary, rather than by making an explicitly negative comment.

2.16 Negative

Distinctly negative rating (e.g., no, wrong, nope).

2.2 Procedural Reactions are defined as instructional reactions that convey instructional meanings and associated instructional-logical meanings, with the exception of those that involve rating processes. Procedural reactions serve the pedagogical function of modifying by clarifying and/or expanding what has been said about procedural matters (e.g., assignments, examinations, class schedule, materials, and classroom routines) in the occasioning move.

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* For complete definitions of the six types of rating reactions see Appendix A, pp. 209-211.

Examples

T/REA: The reason that I didn't cut you off, Tone, was that I was conscious of what Don said and I cut him off too soon.

T/REA: Well now, that is not the question of course I asked.

3. Substantive-Instructional Reactions are defined as reactions that express both substantive meanings and instructional meanings.

3.1 Substantive-Rating Reactions are defined as reactions that include both substantive and rating components.

Example

T/REA: Good point. I'm glad you brought that up. I wasn't thinking of that at the moment, but it's an important problem that faces us in trade because of its political ramifications as well as just economic.

3.2 Substantive-Procedural Reactions are defined as reactions that include both substantive and procedural components.

Example

T/REA: We'll have a report later this period, John, that will help to explain the problem you have just mentioned. In connection with this, it's important to keep in mind that the countries in the Common Market are not in agreement on what should be done about it.

Part Three: Types and Characteristics of Occasioning Moves

The categories listed below describe types and characteristics of occasioning moves.

1. Structuring Occasioning Move
    - 1.1 Identification number
    - 1.2 Speaker (teacher, pupil, or audio-visual device)
    - 1.3 Single or multiple components
    - 1.4 Function and method

2. Soliciting Occasioning Move
    - 2.1 Identification number
    - 2.2 Speaker (teacher or pupil)
    - 2.3 Number of components
    - 2.4 Logical meaning
    - 2.5 Information activity

3. Responding Occasioning Move
    - 3.1 Identification number
    - 3.2 Speaker (teacher or pupil)
    - 3.3 Number of components
    - 3.4 Soliciting/responding logical congruence
    - 3.5 Soliciting/responding information activity congruence

4. Reacting Occasioning Move
    - 4.1 Identification number
    - 4.2 Speaker (teacher or pupil)
    - 4.3 Type of reaction
    - 4.4 Logical meaning

Reliability Test

Since the data coded in the first phase of the research are used in the analysis of reacting moves, additional reliability tests are not reported for the categories of pedagogical moves and for the categories of meanings. Agreement among coding teams for the categories of pedagogical moves in the first phase of the research was 94 per cent in terms of moves and 93 per cent in terms of lines; for the categories of meanings, agreement ranged from 84 to 96 per cent in terms of lines and in terms of moves. (1:58)

It was, however, necessary to obtain an estimate of the degree of reliability for the categories used to describe the characteristics of the occasioning moves as outlined in Part Three of the System for Analysis. Three members of the research staff participated in the reliability test. Two protocols were selected at random from each of five randomly selected teachers. A sample of five per cent of the reacting moves from the beginning, middle and end of the sessions was taken from the ten protocols. After each of the ten samples had been coded independently by the three coders, the percentage of agreement among the three coders was computed in terms of number of moves. Results indicated 97 per cent agreement among coders.

RESULTS OF THE ANALYSIS

This section presents a description of reacting moves in the classrooms studied. For the most part the data are summarized for all 15 classes combined over the four sessions to provide a comprehensive view of reacting moves in the discourse. In some instances, data are presented for each of the 15 classes, for purposes of comparison among the classes. The description is organized around three major questions:

1. What is the function of reacting moves in the discourse of the teacher and the pupil?
2. What types of reacting moves occur in the discourse of the teacher and the pupil?
3. What are the relationships of reacting moves by the teacher and the pupil to their occasioning moves?

Function of Reacting Moves in the Discourse

Data presented in Chapter 2 revealed that reacting moves represent a little less than one-third of all moves spoken in the 15 classes, with responding and soliciting moves accounting for similar percentages of the discourse. In contrast, only one-twentieth (5.5 per cent) of all moves are structuring moves. In terms of lines, reacting accounts for slightly more than one-third of the discourse, with the remaining two-thirds about equally distributed among the three other moves.

The mean length of reacting moves is 3.5 lines of typescript. This contrasts with the mean length of 9.1 lines for structuring, 2.0 for responding and 1.9 for soliciting. Teacher reactions tend to be longer than pupil reactions:

the mean length of teacher reactions is 3.7 lines, and of pupil reactions, 2.5 lines.

Roles of the teacher and the pupil in the classroom are defined in part by frequency of behavior in each category of pedagogical moves. Differences in roles are therefore apparent when the percentages of the teacher's discourse and the pupil's discourse devoted to reacting are considered. The data summarized in Table 22 clearly demonstrate that reacting moves play a more significant part in the teacher's discourse than they do in the pupil's discourse. Reactions account for 39.2 per cent of all teacher moves, but only 15.1 per cent of all pupil moves The picture is approximately the same when these data are considered in terms of percentage of lines. Whereas 44.7 per cent of all lines spoken by the teacher are devoted to reacting, only 19.1 per cent of the lines by the pupil are given over to reacting.

Teacher's Role. Approximately two-fifths of all teacher moves are reacting moves. The median percentage for the 15 teachers is 38.4 per cent, with a high of 43.8 in Class 1 and a low of 30.7 in Class 3. Thirteen teachers are clustered between 37.1 and 43.8 per cent, a range of only seven percentage points. Teachers 11 and 3 are outside this narrow range at the lower end of the distribution, with 34.6 and 30.7 per cent respectively.

If these data are considered in terms of lines spoken, reacting moves account for an even greater percentage of the teacher's discourse. The median percentage of lines devoted to reacting is 46.5 per cent, with a range from 54.0 per cent in Class 10 to 33.7 per cent in Class 5. Nine of the teachers are clustered between 46.4 and 54.0 per cent, a range of only eight percentage points. These findings underscore the significant role that reacting plays in the teacher's discourse.

Pupil's Role. Reacting accounts for a smaller amount of pupil activity than it does of teacher activity. The median percentage of moves by students devoted to reacting is 14.0 per cent, with a range from 26.8 in Class 12 to 3.9 per cent in Class 11. Eight classes are clustered within 10.6 percentage points (12.0 to 22.6), but the classes are fairly well distributed over the entire range.

If these data are considered in terms of percentage of lines, the picture is approximately the same. The median percentage of lines devoted by students to reacting is 15.0 per cent, with a high of 31.9 per cent in Class 10 and a low of 3.4 per cent in Class 14. Seven of the classes cluster in the rather narrow range of seven percentage points (8.8 to 16.2). There is a group of six classes at the upper end of the distribution ranging from 26.1 to 31.9 per cent, and two classes at the lower end with 4.3 and 3.4 per cent.

TABLE 22

PERCENTAGE OF THE TEACHERS' AND PUPILS' MOVES AND LINES DEVOTED TO REACTING FOR EACH OF THE FIFTEEN CLASSES AND FOR ALL CLASSES COMBINED

Class	Teacher		Pupil	
	Moves	Lines	Moves	Lines
All Combined	39.2	44.7	15.1	19.1
1	43.8	53.5	8.8	10.0
2	37.8	46.5	16.4	26.1
3	30.7	37.8	12.0	9.5
4	40.0	49.9	21.2	16.2
5	37.5	33.7	22.6	29.5
6	37.4	49.4	7.0	8.8
7	37.1	34.0	14.0	15.0
8	40.8	47.7	21.4	29.6
9	38.4	34.6	10.1	11.9
10	40.7	54.0	15.2	31.9
11	34.5	34.5	3.9	4.3
12	38.1	41.4	26.8	29.9
13	43.4	48.5	10.0	10.6
14	42.9	50.9	4.7	3.4
15	41.7	46.4	22.3	30.4

Types of Reacting Moves

Table 23 summarizes the distribution of the various types of reacting moves. These data reveal that rating reactions account for 40.5 per cent of all reacting moves. Substantive reactions and substantive-rating reactions account for 23.9 per cent and 24 per cent, respectively. Procedural reactions (8.5 per cent) and substantive-procedural reactions (3.1 per cent) occur much less frequently in the discourse.

Data included in Table 23 help to delineate further the distinctive roles of the teacher and the pupil in the classroom. Rating reactions are obviously a significant part of the teacher's role, but they play only a minor part in the pupil's discourse. In contrast, the largest proportion of pupil reactions are substantive reactions, but a relatively small proportion of teacher reactions are of this type. Reactions that include both substantive and rating components represent a substantial portion of teacher reactions, but only a small portion of student reactions. Procedural reactions and substantive-procedural reactions occur infrequently in the discourse both of the teacher and of the pupil.

Teacher's Role. Rating reactions account for the largest percentage of teacher reactions: 46.2 per cent of all reacting moves by the teacher are in this category. This clearly reflects one of the teacher's major functions in the classroom, which is to rate statements made by students. This responsibility of the teacher is further highlighted by the fact that the next highest percentage is substantive-rating reactions, representing 27.2 per cent of all teacher reacting moves. These two types of reactions therefore account for almost three-fourths of all teacher reactions. This is in marked contrast to the pupil who infrequently speaks reactions that include rating components.

When one considers all teacher reactions concerned with rating (that is, rating reactions and substantive-rating reactions) that are occasioned by pupil verbal moves and by physical actions, he finds that the ratio of positively toned reactions to negatively toned reactions is 4 to 1. Basically positive reactions (positive, admitting and repeating) account for 79.4 per cent of the teacher's rating reactions, while basically negative reactions (qualifying, not admitting and negative) represent only 20.6 per cent. It is also interesting to note that each of the three categories of positive, admitting and repeating accounts for approximately one-third of the teacher's positively toned reactions. In contrast, when one considers the three negatively toned categories, he finds that qualifying accounts for two-thirds, while negative and not admitting together account for the remaining one-third.

These data clearly demonstrate that when teachers rate what pupils say and do in the classroom they are four times more positive than negative in their

TABLE 23

DISTRIBUTION OF REACTING MOVES BY TYPE OF MOVE, FOR TEACHER AND PUPIL AND FOR TEACHER AND PUPIL COMBINED

Type of Reacting Moves	Total		Teacher		Pupil	
	%	f	%	f	%	f
All Combined	100.0	4649	100.0	3759	100.0	890
Substantive	23.9	1110	16.8	633	53.6	477
Rating	40.5	1886	46.2	1738	16.6	148
Procedural	8.5	395	6.9	258	15.4	137
Substantive-Rating	24.0	1115	27.2	1021	10.6	94
Substantive-Procedural	3.1	143	2.9	109	3.8	34

reactions; and further, when the teacher does speak a negatively toned reaction, he is much more inclined to qualify rather than not to admit or to express a distinctly negative reaction.

The teacher infrequently reacts substantively: substantive reactions represent only 16.8 per cent of all reacting moves by the teacher. Procedural reactions accounting for only 6.9 per cent and substantive-procedural reactions representing 2.9 per cent occur even less frequently in the teacher's discourse.

Pupil's Role. When the pupil reacts, he does so most frequently by expressing substantive meanings: substantive reactions represent 53.6 per cent of all pupil reactions. In contrast, the pupil rarely reacts by rating other participants. Although rating reactions account for 16.6 per cent of the pupil's reactions, the pupil is responsible for only 148 (seven per cent) of the 1,886 rating reactions that occur in the discourse. Fifteen per cent of all pupil reactions are procedural reactions, but these represent over one-third of all procedural reactions that occur in the discourse.

The pupil infrequently speaks reactions that include both substantive and instructional components. Double component reactions are clearly a part of the teacher's role and not of the pupil's role. The pupil speaks only 94 (nine per cent) of the 1,115 substantive-rating reactions and 34 (23 per cent) of the 143 substantive-procedural reactions that occur in the discourse.

Relationships to Occasioning Moves

In view of the reflexive nature of reacting moves, the relationships of reactions to their occasioning moves are of central importance in the analysis. Virtually all 4,649 reactions are occasioned by vocal actions (i.e., pedagogical moves) rather than by physical actions or by pauses in the discussion. Only 55 reactions occasioned by pauses occur in the 15 classes, and all but one of these are spoken by the teacher. Similarly, a total of 36 reactions occasioned by physical actions occur in the discourse, and all but two of these are by the teacher. The nature of the subject matter under study probably accounts for these results. In a subject such as science which includes laboratory work involving the manipulation of apparatus, one would expect to find a greater number of reactions occasioned by physical actions.

Two-thirds of all reacting moves are occasioned by responding moves, and one-fourth by reactions; together, responding and reacting account for 92 per cent of all occasioning moves. Only 2.3 per cent of all reactions are occasioned by structuring moves, and 1.4 per cent by solicitations.

The overwhelming number of teacher reactions and pupil reactions are occasioned by single moves. However, a small number of reacting moves occasioned by more than one move occur in the discourse. Reactions of this kind account for 7.1 per cent of all teacher reactions; in only two classes does one find pupil reactions occasioned by more than one move, and these constitute less than one per cent of all pupil reactions.

Study of the relationships of reactions to their occasioning moves is helpful in delineating further the distinctive pedagogical roles of the teacher and the pupil. The data reveal that teacher reactions are almost always occasioned by pupil moves, and most of these are pupil responses. The pupil reacts twice as frequently to the teacher as he does to other pupils. When the pupil reacts to the teacher, he typically reacts to a teacher reaction; when he reacts to a fellow pupil, he frequently reacts to a pupil reaction or pupil response.

Teacher's Role. In classroom discussion, the teacher infrequently reacts to his own verbal moves. As indicated in Table 24, 96.7 per cent of all teacher reactions are occasioned by moves spoken by pupils. Pupil responding moves occasion 74.1 per cent of all teacher reactions. This finding is consistent with data already reported: since virtually all teacher reactions are occasioned by pupil moves and since responding accounts for the major portion of pupil activity, it follows that pupil responses would most frequently be the occasion for teacher reactions. A relatively small percentage (14.9 per cent) of all teacher reactions is occasioned by pupil reactions. The teacher infrequently reacts to pupil structuring or soliciting, each of which occasions less than two per cent of teacher reactions.

Since three-fourths of all teacher reactions are occasioned by pupil responding moves, the relationships between these two types of moves deserve further analysis. As indicated in Table 24, teachers react to 2,800 or 72.4 per cent, of the 3,863 pupil responses which occur in the discourse. (In contrast, pupils react to only 114, or 3 per cent, of all responding moves by fellow pupils.)

Slightly more than one-half (51.8 per cent) of teacher reactions to pupil responses are rating reactions. This again underscores one of the teacher's principal jobs in the classroom. The rating function of the teacher is further highlighted by the fact that 30.2 per cent, the next highest percentage, are substantive-rating reactions. Less frequently, 12.7 per cent of the time, does the teacher react with substantive reactions, and only 5.3 per cent of his reactions are procedural and substantive-procedural reactions.

The importance of the rating function in the teacher's role is emphasized by the fact that 2,301, or 82 per cent, of all teacher reactions to pupil responses

TABLE 24

DISTRIBUTION OF TYPES OF TEACHER REACTING MOVES BY OCCASIONING MOVE AND SPEAKER

Speaker and Type of Occasioning Move	Type of Teacher Reacting Move					
	Total		Substantive		Rating	
	%	f	%	f	%	f
All Combined	100.0	3759	17.0	633	46.0	1738
Total T-REA Occasioned by T-Moves	3.1	110	2.0	68	0.1	5
T-SOL	0.1	4	0	1	0	0
T-RES	0.6	19	0.3	11	0	1
T-STR	0	1	0	0	0	0
T-REA	2.5	86	1.7	56	0.1	4
T-Physical T-Pause T-NOC	0	0	0	0	0	0
Total T-REA Occasioned by P-Moves	96.7	3639	14.9	560	45.9	1733
P-SOL	0.8	29	0.1	5	0.3	11
P-RES	74.1	2800	9.3	355	38.6	1458
P-STR	1.5	55	0.2	6	0.8	29
P-REA	14.9	543	3.5	130	5.2	194
P-Physical P-Pause P-NOC	5.5	212	1.8	64	1.0	41
Total T-REA Occasioned by A-STR	0.2	10	0.1	5	0	0

(Table continued on next page)

TABLE 24 (continued)

DISTRIBUTION OF TYPES OF TEACHER REACTING MOVES BY OCCASIONING MOVE AND SPEAKER

Speaker and Type of Occasioning Move	Type of Teacher Reacting Move					
	Procedural		Substantive/ Rating		Substantive/ Procedural	
	%	f	%	f	%	f
All Combined	7.0	257	27.1	1021	2.9	109
Total T-REA Occasioned by T-Moves	0.3	12	0.1	3	0.6	22
T-SOL	0.1	3	0	0	0	0
T-RES	0	1	0	1	0.1	5
T-STR	0	1	0	0	0	0
T-REA	0.2	7	0.1	2	0.5	17
T-Physical T-Pause T-NOC	0	0	0	0	0	0
Total T-REA Occasioned by P-Moves	6.6	241	27.0	1018	2.3	87
P-SOL	0.2	10	0	1	0.1	2
P-RES	2.5	92	22.4	843	1.3	52
P-STR	0.3	12	0.2	7	0	1
P-REA	2.0	61	3.7	141	0.5	17
P-Physical P-Pause P-NOC	1.6	66	0.7	26	0.4	15
Total T-REA Occasioned by A-STR	0.1	5	0	0	0	0

include rating components. Of these 2,301 reactions, approximately two-thirds (62.8 per cent) are rating reactions and about one-third (27.2 per cent) are substantive-rating reactions; when the teacher rates pupil responses, he rates pupils more than twice as frequently as he rates and suggests some substantive modification of what the pupil said.

It is also interesting to note that the teacher is four times more positive than negative when he rates pupil responses: 81 per cent of teacher ratings are basically positive (i.e., positive, admitting and repeating) and only 19 per cent are basically negative (i.e., negative, not admitting, qualifying). Even when the teacher expresses negatively toned ratings, he is much more inclined to rate by qualifying rather than by not admitting or by a distinctly negative reaction: qualifying occurs twice as frequently as the not admitting and the negative categories combined.

Table 25 presents the distribution of positive and negative rating reactions by teachers to pupil responses, according to the information activity congruence of the solicitation and response.* These data reveal that of the 2,301 pupil responding moves that the teacher rates, 95.5 per cent (2,197) are operationally congruent. Of these congruent responses, 80.2 per cent are the occasion for positive ratings by the teacher, and 19.8 per cent for negative ratings. Similarly, of the operationally incongruent responses, 78.8 per cent are the occasion for positive teacher ratings, and 21.2 per cent for negative ratings. Thus, surprisingly enough, the ratio of positive to negative ratings by the teacher both to congruent and to incongruent responses is the same: 4 to 1.

One might reasonably expect the teacher when reacting to an operationally incongruent pupil response to make frequent use of substantive-rating reactions which make it possible for him not only to rate the pupil, but also to suggest some modification or clarification of what the pupil said. However, the data in Table 25 indicate that this is not the case; the teacher uses rating reactions twice as frequently as he uses substantive-rating reactions in reacting to operationally incongruent pupil responses.

The picture is very much the same when one considers the teacher's rating reactions to pupil responses that are logically congruent and logically incongruent with the solicitations that elicited them.** As the data included in Table 26

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* See Chapter Three, pp. 69-71 for discussion of information activity congruence of responding and soliciting moves.

** See Chapter Three, pp. 68-69 for discussion of logical congruence of responding and soliciting moves.

TABLE 25

DISTRIBUTION OF POSITIVE AND NEGATIVE RATING REACTIONS BY TEACHERS FOLLOWING A SEQUENCE OF SOLICITATION-PUPIL RESPONSE ACCORDING TO INFORMATION ACTIVITY

CONGRUENCE OF SOLICITATION AND RESPONSE

Pupil Response	Teacher Reaction													
To Which	Total		Total Positive		Positive		Substantive/ Positive		Total Negative		Negative		Substantive/ Negative	
Teacher Reacts	%	f	%	f	%	f	%	f	%	f	%	f	%	f
All Combined	100.0	2301	80.0	1843	51.2	1180	28.8	663	20.0	458	12.1	278	7.9	180
Information Activity Congruence	100.0	2197	80.2	1761	51.1	1124	28.9	637	19.8	436	12.0	264	7.8	172
Information Activity Incongruence	100.0	104	78.8	82	53.8	56	25.0	26	21.2	22	13.5	14	7.7	8

TABLE 26

DISTRIBUTION OF POSITIVE AND NEGATIVE TEACHER REACTIONS FOLLOWING A SEQUENCE OF SOLICITATION-PUPIL RESPONSE ACCORDING TO LOGICAL CONGRUENCE OF SOLICITATION AND RESPONSE

Pupil Response To Which Teacher Reacts	Teacher Reaction													
	Total		Total Positive		Positive		Substantive/ Positive		Total Negative		Negative		Substantive/ Negative	
	%	f	%	f	%	f	%	f	%	f	%	f	%	f
All Combined	100.0	2301	80.0	1843	51.2	1180	28.8	663	20.0	458	12.1	278	7.9	180
Logically Congruent Response	100.0	2213	80.0	1770	51.0	1130	29.0	640	20.0	443	12.0	267	8.0	176
Logically Incongruent Response	100.0	88	82.9	73	56.8	50	26.1	23	17.1	15	12.5	11	4.6	4

indicate, 96 per cent (2,213) of the 2,301 pupil responses that the teacher rates are logically congruent, and only 4 per cent are logically incongruent. Of the logically congruent responses, 80 per cent are the occasion for positive ratings by the teacher, and 20 per cent for negative ratings. Of the logically incongruent responses, 82.9 per cent are the occasion for positive ratings, and 17.1 per cent for negative ratings. Thus, the ratio of positive to negative ratings by the teacher both to logically congruent and to logically incongruent responding moves is 4 to 1.

Again, one might reasonably expect that teachers in reacting to logically incongruent responses by pupils would use substantive-rating reactions more frequently than rating reactions. But the data indicate that this is not the case; when the teacher reacts to logically incongruent pupil responses, he uses rating reactions twice as frequently as he uses substantive-rating reactions.

These data thus reveal the surprising fact that the teacher rates congruent and incongruent responding moves by the pupil in the same fashion: the ratio of positive to negative reactions is identical, and the proportion of rating reactions and substantive-rating reactions is almost identical.

Pupil's Role. The pupil reacts twice as frequently to the teacher as he does to fellow pupils. As shown in Table 27, slightly more than two-thirds of all pupil reactions are occasioned by teacher moves and slightly less than one-third by moves of other pupils. This reflects the typical pattern of interaction in the classes studied: the principal channel of communication is between teacher and pupil, rather than between pupil and pupil.

While responding moves occasion the greatest proportion of teacher reactions, reacting moves by the teacher and fellow pupils occasion the greatest number of pupil reactions. Almost one-half (49.4 per cent) of all pupil reactions are occasioned by teacher reactions. Much less frequently, 12.9 per cent of the time, does the pupil react to teacher responses. Only rarely does he react to teacher structuring and teacher soliciting moves, which together occasion only 7.4 per cent of all pupil reactions.

When the pupil reacts to a fellow pupil, it tends to be to a pupil reaction or to a pupil response: 13.9 per cent of pupil reactions are occasioned by the former, and 12.8 per cent by the latter. Although pupil responding accounts for over four times as many moves as does pupil reacting, the pupil reacts to a fellow pupil's reaction just about as frequently as he does to a fellow pupil's response. The pupil infrequently reacts to a fellow pupil's soliciting move or structuring move, which together occasion only 1.5 per cent of all pupil reactions.

TABLE 27

DISTRIBUTION OF TYPES OF PUPIL REACTING MOVES
BY OCCASIONING MOVE AND SPEAKER

Speaker and Type of Occasioning Move	Type of Pupil Reacting Move					
	Total		Substantive		Rating	
	%	f	%	f	%	f
All Combined	100.0	890	53.6	477	16.7	148
Total P-REA Occasioned by T-Moves	69.9	622	37.8	337	11.5	102
T-SOL	2.9	25	0.3	3	1.0	8
T-RES	12.9	115	7.0	62	2.3	21
T-STR	4.5	40	2.8	25	0.1	1
T-REA	49.4	440	27.7	247	8.1	72
T-Physical T-Pause T-NOC	0.2	2	0	0	0	0
Total P-REA Occasioned by P-Moves	29.8	265	15.8	140	5.2	46
P-SOL	0.6	6	0.3	3	0	0
P-RES	12.8	114	6.6	59	2.7	24
P-STR	0.9	9	0.4	4	0	0
P-REA	13.9	122	7.3	64	2.3	20
P-Physical P-Pause P-NOC	1.9	17	1.1	10	0.2	2
Total P-REA Occasioned by A-STR	0.3	3	0	0	0	0

(Table continued on next page)

TABLE 27 (continued)

DISTRIBUTION OF TYPES OF PUPIL REACTING MOVES

BY OCCASIONING MOVE AND SPEAKER

Speaker and Type of Occasioning Move	Type of Pupil Reacting Move					
	Procedural		Substantive/ Rating		Substantive/ Procedural	
	%	f	%	f	%	f
All Combined	15.3	137	10.6	94	3.9	34
Total P-REA Occasioned by T-Moves	11.1	99	7.2	64	2.3	20
T-SOL	1.6	14	0	0	0	0
T-RES	1.7	15	1.6	14	0.3	3
T-STR	1.2	10	0.3	3	0.1	1
T-REA	6.4	58	5.3	47	1.9	16
T-Physical T-Pause T-NOC	0.2	2	0	0	0	0
Total P-REA Occasioned by P-Moves	4.2	38	3.4	30	1.3	11
P-SOL	0.3	3	0	0	0	0
P-RES	1.6	14	1.7	15	0	0
P-STR	0.4	4	0	0	0.2	2
P-REA	1.7	15	1.7	15	0.1	1
P-Physical P-Pause P-NOC	0	0	0	0	1.0	8
Total P-REA Occasioned by A-STR	0	0	0	0	0.3	3

The fact that two-thirds of all pupil reactions are to teacher reactions and to reactions of fellow pupils highlights a significant feature of the communication network in the classes studied. The pupil participates in classroom discussion most frequently when directed to respond by a teacher's solicitation, and he usually does not feel free to enter the discussion again with a reacting move until after the teacher has reacted; occasionally the pupil reacts to responding moves, but much more frequently his reactions are to reactions of other participants, usually of the teacher.

Since one-half of all pupil reactions are occasioned by teacher reactions, the relationships between these two speaker-move combinations call for further analysis. Pupils react to 440, or 11.7 per cent, of the 3,759 teacher reactions which occur in the discourse. When one considers the types of teacher reactions that occasion various types of pupil reactions, he finds (Table 28) that the most frequent combination is pupil substantive reaction occasioned by teacher substantive-rating reactions, accounting for 21.6 per cent of all pupil reactions occasioned by teacher reactions. The second highest frequency is represented by pupil substantive reaction occasioned by teacher substantive reaction, which accounts for 70, or 15.9 per cent. The third most frequent combination is pupil substantive reaction occasioned by teacher rating reaction, which represents 60, or 13 6 per cent. Together these three combinations account for 51 per cent of all pupil reactions occasioned by teacher reactions; none of the other 22 possible combinations accounts for more than 5.4 per cent. It is clear that when the pupil reacts to teacher reactions, he does so most frequently by reacting substantively to teacher substantive, teacher substantive-rating and teacher rating reactions, in that order.

Further examination of the data reveals that the pupil reacts to a higher percentage of teacher substantive reactions and teacher substantive-rating reactions which occur in the discourse than he does to teacher rating reactions: while the pupil reacts to 20.8 per cent of all teacher substantive reactions and 14.6 per cent of all teacher substantive-rating reactions, he reacts to only 5.7 per cent of all teacher rating reactions. Obviously, the pupil is more inclined to view teacher substantive reactions and teacher substantive-rating reactions rather than teacher rating reactions as the appropriate occasions for reacting to the teacher. This suggests that if a teacher wishes to encourage pupil reacting, he should react more frequently to pupil responses with substantive and substantive-rating reactions than with rating reactions.

Summary of Results

1. Reacting moves account for a substantial proportion of the discourse in the classes studied; reactions constitute a little less than one-third of all moves made and slightly more than one-third of all lines spoken.

TABLE 28

FREQUENCY DISTRIBUTION OF TYPES OF PUPIL REACTIONS ACCORDING TO TYPES OF OCCASIONING TEACHER REACTIONS

Type of Occasioning Teacher Reaction	Total	Type of Pupil Reaction				
		Substantive	Rating	Procedural	Substantive/ Rating	Substantive/ Procedural
All Combined	440	247	72	58	47	16
Substantive	132	70	24	10	22	6
Rating	100	60	20	10	8	2
Procedural	43	13	6	22	1	1
Substantive/ Rating	150	95	20	14	15	6
Substantive/ Procedural	15	9	2	2	1	1

2. Reacting moves play a more significant part in the teacher's discourse than they do in the pupil's discourse. Reactions account for 38.9 per cent of the teacher's moves, but only 15.1 per cent of the pupil's moves. Similarly, whereas 44.7 per cent of all lines spoken by teachers are devoted to reacting, only 19.1 per cent of the lines by pupils are accounted for by reactions.

3. The roles of the teacher and the pupil are in part defined by frequency of behavior in the various types of reactions. Rating reactions are an important part of the teacher's role, but they play only a minor part in the pupil's role. In contrast, the largest proportion of student reactions are substantive reactions, but only a relatively small proportion of teacher reactions are of this type. Procedural reactions and substantive-procedural reactions occur infrequently in the discourse both of teachers and of pupils.

4. Virtually all reactions are occasioned by verbal actions (i.e., pedagogical moves) rather than by physical actions or by pauses in the discussion, and most teacher reactions and pupil reactions are occasioned by single moves.

5. Teacher reactions are almost always occasioned by pupil moves, and three-fourths of these are pupil responses. Pupils react twice as frequently to the teacher as they do to fellow pupils. When the pupil reacts to the teacher, it typically is to a teacher reaction; when he reacts to a fellow pupil, it is likely to be to a pupil reacting or pupil responding move. The pupil is much more inclined to view teacher substantive reactions or teacher substantive-rating reactions rather than teacher rating reactions as the appropriate occasions for reacting to the teacher.

6. When teachers rate what pupils say and do in the classroom, they are four times more positive than negative. When the teacher does react negatively to the pupil, he is much more inclined to qualify rather than not to admit or to express a distinctly negative reaction. This is true of the teacher's reactions to incongruent pupil responses as well as to congruent pupil responses.

CHAPTER SIX

TEACHING CYCLES: PATTERNS OF PEDAGOGICAL MOVES

Paralleling the intensive study of the pedagogical moves as reported in preceding chapters, major attention was also given in phase two to the patterning of these pedagogical moves and their relationships to one another. In the first phase of this research, the concept of teaching cycles was used to describe the patterns of verbal behavior in the classrooms studied by reconstructing the discourse so as to account for all of the patterns of pedagogical moves. In the second phase, a modified form of teaching-cycle analysis was used in an effort to emphasize the temporal ordering of these patterns.

PHASE ONE: FORMALLY-ORDERED TEACHING CYCLES

In the analysis of classroom discourse in phase one, a pedagogical move was seen as comparable to a move in a chess match or a single play in a game of football. Teaching cycles, on the other hand, were seen as interrelated series of moves or plays. The teaching cycle represented an attempt to conceptualize that larger unit of classroom discourse that seemed to be inaugurated by structuring and soliciting moves. It was an effort to see the several pedagogical moves in combination with the expectation that these patterns of moves would provide a fruitful and reliable way of describing the ebb and flow of classroom discourse.

A teaching cycle was defined as a series of pedagogical moves beginning with a structuring move or a solicitation that is not preceded by a structuring move and ending with the move that precedes a new structuring or a new unstructured solicitation. Since, by definition, both responding and reacting moves are either actively elicited or occasioned by a previous pedagogical move, neither one can be said to begin a cycle, thus substantially limiting the number of combinations of moves.

Basic Framework

Figure I illustrates the interplay among pedagogical moves by indicating the possible paths by which discussion may flow within the framework of a single teaching cycle. The unbroken lines indicate that only a single move in the given direction is possible since a second structuring or soliciting move would initiate a new cycle. The broken line indicates that many such moves are possible within a single cycle; that is, there may be more than one response to a

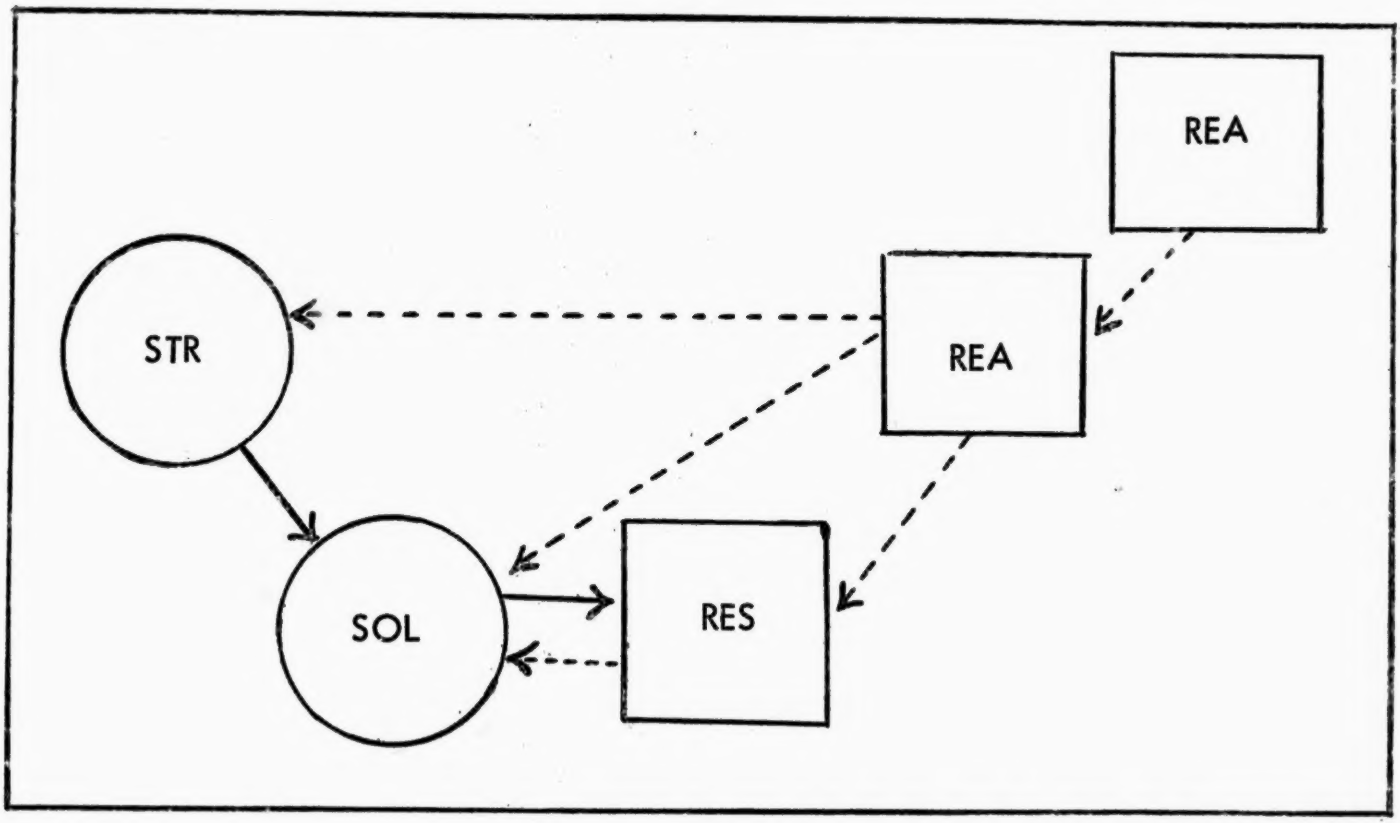

FIGURE I

POTENTIAL INTERACTION PATTERNS AMONG PEDAGOGICAL MOVES

Code

○ -- Initiating Moves

□ -- Reflexive Moves

single solicitation and several reactions to any of the other pedagogical moves.

Given a structuring move, there are two subsequent moves which will sustain the cycle: either (1) the structuring leads into a solicitation, or (2) the structuring is the occasion for feedback in the form of reactions. If neither of these moves occurs, a new teaching cycle must begin with the next move.

If the structuring move is indeed followed by a solicitation or if the cycle begins with an unstructured soliciting move, there are two further movements that will sustain the cycle. The more probable one is that the solicitation will elicit a direct response or several direct responses, but there is also the possibility that there will be one or more reactions to the solicitation (e.g., "That's a stupid question.") rather than responses to it. Once a speaker makes a responding move, only further responding moves or reactions may follow if the cycle is to continue. Finally, reacting moves may themselves be the occasion for further reacting moves.

Given this model, there are twenty-one possible types of teaching cycles, each representing a somewhat different pattern of classroom discourse. The following list presents the twenty-one possible patterns:

TEACHING CYCLES

1. STR
2. STR SOL
3. STR REA
4. STR REA REA...
5. STR SOL RES
6. STR SOL RES RES...
7. STR SOL REA
8. STR SOL RES REA...
9. STR SOL RES REA
10. STR SOL RES REA REA...
11. STR SOL RES REA RES...
12. STR SOL RES REA RES... REA...
13. SOL
14. SOL RES
15. SOL RES RES...
16. SOL REA
17. SOL REA REA...
18. SOL RES REA
19. SOL RES REA REA...
20. SOL RES REA RES...
21. SOL RES REA RES... REA...

Code

STR - Structuring
SOL - Soliciting
RES - Responding
REA - Reacting

... - one or more additional moves of the kind designated, e.g., RES... means one or more additional responding moves to the same soliciting move.

With respect to the actual coding of teaching cycles, the combining of the pedagogical moves into the several patterns of discourse was determined by the definition of teaching cycles with only minor modifications. One involved the so-called "nodding SOL." This is the classroom convention whereby the teacher usually "gives the nod" to the student before he may speak. Normally, this is accomplished simply by calling the student's name. This convention is recorded in the original analysis as T/SOL/-/-/ACV/PRF/I/; that is, the teacher solicits with the expectation that someone will perform a vocal action. Technically, then, "John?" is a solicitation and by definition would inaugurate a new teaching cycle. However, since it merely gives someone the right to speak and is not intended in itself to elicit a specific response, "nodding SOL's" were disregarded for purposes of the teaching-cycle analysis.

The second modification involved those relatively few instances where a complete cycle was interlarded between two moves of another cycle. The following is an example of this situation:

Pupil (SOL) : Now these radios, they would have a quota on them, wouldn't they?

Teacher (SOL) : They'd have a what?

Pupil (RES) : A quota.

Teacher (RES-M3): They might. I don't really know whether radios do or not -- transistor radios.

The "M3" which appears in the coding of the last move indicates that this response is to a solicitation that appeared three moves earlier. It is an answer to the first question. In terms of formally-ordered teaching cycles, this was coded as two cycles of type 14 (SOL RES), but with the second response labeled as belonging to the first cycle. Otherwise, if strict temporal order were maintained, the impression would be created that the second solicitation elicited two responses and the first none.

In general, temporal sequence in phase one was modified to preserve the integrity of form within the teaching cycle. Formally-ordered teaching cycles, then, represented a logical reconstruction of the discourse rather than a recapitulation of the precise order in which the pedagogical moves were made. Thus a response was always considered a part of the cycle in which the solicitation that elicited it appeared, and a reaction was considered part of the cycle in which the move that occasioned it appeared. This despite the fact that another teaching cycle may have intervened between the two moves.

Analysis

Table 29 provides a picture of the patterning of pedagogical moves for all fifteen classes combined. The rows indicate the three possible initiatory patterns. The column headings represent the nine reflexive patterns. The most frequent combination was a simple solicitation (row 2) as the initiatory move and a single response followed by a single reaction (column 6) as the reflexive pattern. For the group as a whole, SOL RES REA accounted for 26 per cent of the total number of cycles. SOL RES (row 2, column 2) was the next most common teaching cycle, accounting for 22.3 per cent of the total. The total percentage of structure-initiated cycles may be obtained by combining the totals for rows 2 and 4 (18.2 per cent). Similarly, one may obtain the total number of teaching cycles which include at least one reaction by combining columns 4 through 9 or the number of cycles which have multiple responses by combining columns 3, 7, and 9. Since a response cannot occur in a cycle in which there is no soliciting move, the six cells in row 2 which include responding moves are invalid.

Table 30 summarizes the cyclical patterning of pedagogical moves (using formally-ordered teaching cycles) for each of the fifteen teachers. Two basic conclusions may be drawn from these data. First, there appears to be an overall design from which these classes do not deviate radically. With the single exception of Class 9, the two highest ranking cycles in all classes are cycles 14 (SOL RES) and 18 (SOL RES REA). A further indication of the lack of variability is the fact that of the twenty-one types of teaching cycles, only six account for 80 per cent of the total number of cycles. The two highest ranking cycle types alone account for 48 per cent of all teaching cycles. At the core of five of the six major cycles in terms of frequency is the soliciting-responding pattern. Almost all of the differences among these classes may be seen as modifications of this basic pattern.

Paradoxically, the second striking aspect of these data is that within this basic design there is still considerable variability. The differences are reflected in three dimensions of teaching-cycle analysis: cycle activity, percentage of teacher-initiated cycles, and cycle pattern.

The rate of cycle activity (Table 31), as measured by the cycle activity index, ranges from 0.9 cycles per minute (Class 9) to 3.0 cycles (Class 13) for the entire unit. Over the sixty individual sessions, the range is from 0.6 in the fourth session of Class 14 to 3.8 in the second session of Class 1. The mean cycle activity index is 1.9, and the standard deviation is .69. The median is also 1.9. Significant differences clearly exist in the present sample with respect to the rate at which verbal interchanges take place.

TABLE 29

DISTRIBUTION OF FORMALLY-ORDERED TEACHING CYCLES ACCORDING TO INITIATORY AND REFLEXIVE PATTERNS FOR ALL FIFTEEN CLASSES COMBINED

Initiatory Patterns		Total	No Reflexive Pattern	Reflexive Patterns							
				RES	RES RES	REA	REA REA	RES REA	RES RES... REA	RES REA REA...	RES REA RES... REA...
Total	%	97.5*	13.4	25.4	0.9	3.2	1.4	31.7	2.9	9.8	8.8
	f	4478	614	1169	44	141	66	1459	131	450	404
STR	%	4.1	1.9	-	-	1.4	0.8	-	-	-	-
	f	186	85	-	-	62	39	-	-	-	-
SOL	%	79.3	9.7	22.3	0.8	1.5	0.5	26.0	2.5	9.0	7.0
	f	3642	445	1025	38	67	24	1196	114	413	320
STR SOL	%	14.1	1.8	3.1	0.1	0.3	0.1	5.7	0.4	0.8	1.8
	f	650	84	144	6	12	3	263	17	37	650

* 114 or 2.5 per cent of the teaching cycles were not codable because tape recordings were partly inaudible.

The second measure of variability, percentage of teacher-initiated teaching cycles (Table 32), indicates further differences among these teachers. In three of the sessions, the first in Class 6 and the first and third in Class 9, there were no instances of pupil-initiated cycles. By contrast, in the fourth session of Class 5, pupils initiated 63.1 per cent of the cycles as compared to 36.9 per cent by the teacher. Taking the fifteen classes as a whole, the range of teacher-initiated cycles is from 96.6 per cent of the total cycles (Class 9) to 6.12 per cent (Class 5). The mean percentage of teacher initiation of teaching cycles for these classes is 84.5 per cent and the median is 88 per cent.

Further differences are reflected in the third variable (Table 30), cycle pattern. Despite the predominant solicitation-response pattern of all the teachers in the group, important differences are evident in the extent to which these teachers and pupils shaped, molded, and framed this basic unit. Three major types of pattern modification are evident: (a) a structuring move preceding the solicitation -- primarily cycles 5 and 9; (b) a reaction following the response -- primarily cycle 18; and (c) a solicitation which elicits multiple responses or calls out multiple reactions -- primarily cycles 21 and 19. All of these modifications may, of course, occur in combination.

Class 7 and Class 13, for example, contrast sharply in the extent to which cycles are initiated with structuring moves. In the case of the former, it is 34 per cent of the total cycles; for the latter, it is less than 5 per cent. Classes 12 and 9 differ markedly in terms of their cycle 14 (SOL RES) to 18 (SOL RES REA) ratio, that is, the extent to which a single reaction is likely to follow a question-answer interchange. For Class 12, the ratio of cycle 14 to cycle 18 is approximately 6:4; for Class 9, it is 1:4. An indication of variability with respect to the third type of modification, multiple responses and reactions, may be seen in the contrasting percentages of cycle 21 (SOL RES REA RES... REA...). in the case of Class 14, this is 12.1 per cent of all cycles, and for Class 3, 2.0 per cent. For cycle 19 (SOL RES REA REA...), the range is from 5.2 per cent (Class 11) to 14.4 per cent (Class 8).

Taken together, the factors of rate, source, and pattern may be seen as three significant characteristics of classroom discourse. These three factors in relationship to each other constitute a way of describing teaching style. It should therefore be possible to cluster those classes characterized by similar styles of verbal activity.

Two classes that can be paired stylistically in all three of the dimensions, for example, are Classes 2 and 4. Both classes reflect the same cycle activity index, a moderate 1.9. Both classes also reflect comparable percentages of teacher-initiated cycles in the low to moderate range. In terms of pattern, they differ only slightly in their relative use of cycles 18 (SOL RES REA) and 14 (SOL RES). In Class 2, cycle 14 is somewhat more likely to occur than is

TABLE 30

PERCENTAGE DISTRIBUTION OF FORMALLY-ORDERED TEACHING CYCLES ACCORDING TO CYCLE TYPE FOR EACH OF THE FIFTEEN CLASSES

Cycle	Teacher						
Type	1	2	3	4	5	6	7
1	0.4	1.4	1.3	1.5	1.8	2.5	5.3
2	0.6	1.1	3.3	1.5	2.5	0.5	1.1
3	0.6	0.4	3.0	0.4	4.3	0.5	3.4
4	0.4	1.4	1.3	0.4	0.7		1.5
5	1.7	3.6	3.7	1.5	5.0	2.0	9.1
6		0.4	0.3	0.4	0.4		
7			0.3	0.4	0.4		0.4
8							
9	3.6	3.9	6.3	5.6	6.8	3.9	9.1
10	0.2	2.1	0.7	1.1		0.5	2.3
11	0.6		0.7	0.7	0.7		
12	1.3	3.9	1.0	3.7	2.4	1.5	1.9
13	6.1	11.1	20.3	12.4	11.5	6.9	2.8
14	20.8	24.0	23.0	20.2	19.7	35.5	18.9
15	0.8	1.1	0.7	0.4	0.4	0.5	
16	0.8	1.1	2.7	1.9	2.2	0.5	0.7
17	0.6		0.3	0.4	2.5	1.0	
18	39.7	19.6	18.7	22.5	13.6	28.0	25.6
19	7.6	7.5	6.7	10.9	10.0	8.4	9.4
20	3.4	4.3	1.7	3.7	2.2	1.5	1.9
21	7.4	9.6	2.0	8.6	8.6	3.4	4.5
NC	3.4	3.6	2.0	1.9	4.3	2.0	2.3
All Types	100.0	100.0	100.0	100.0	100.0	100.0	100.0

LEGEND

1. STR 2. STR SOL 3. STR REA 4. STR REA REA...
5. STR SOL RES 6. STR SOL RES RES... 7. STR SOL REA
8. STR SOL REA REA... 9. STR SOL RES REA
10. STR SOL RES REA REA... 11. STR SOL RES REA RES...
12. STR SOL RES REA RES... REA... 13. SOL 14. SOL RES
15. SOL RES RES... 16. SOL REA 17. SOL REA REA...
18. SOL RES REA 19. SOL RES REA REA... 20. SOL RES REA RES...
21. SOL RES REA RES... REA... NC NOT CODABLE

(Table continued on next page)

TABLE 30 (continued)

PERCENTAGE DISTRIBUTION OF FORMALLY-ORDERED TEACHING CYCLES ACCORDING TO CYCLE TYPE FOR EACH OF THE FIFTEEN CLASSES

Cycle	Teacher							
Type	8	9	10	11	12	13	14	15
1	0.3	11.5	2.1	2.1	1.6	0.3	2.3	1.5
2	1.3	2.0	0.4	4.2	3.2	0.6	2.0	3.9
3	0.6		0.4	0.3	0.8	0.3	2.0	3.2
4	1.3	2.0	0.9		1.6	0.2		2.0
5	3.8	3.4	4.3	4.5	4.0	0.8	2.3	2.0
6				0.3				0.2
7		2.0	0.4	0.3	0.4		0.4	0.2
8			1.3					
9	3.8	17.6	8.1	13.9	9.7	1.0	5.8	2.0
10	1.9	1.4	0.4	0.7	2.0		0.4	0.2
11	0.3			1.4		0.3		0.2
12	1.3		0.4	0.7	4.9	1.1	2.7	1.5
13	7.3	4.7	4.7	9.7	9.7	13.7	9.3	8.6
14	22.4	7.4	25.5	17.7	22.7	28.2	15.2	23.4
15	0.6			0.7	1.6	1.9		1.5
16		6.1	0.9	0.7	1.2	1.0	2.3	2.5
17				0.3		0.5	0.8	1.0
18	30.7	30.4	26.4	33.0	14.2	26.0	31.5	23.2
19	14.4	6.1	10.6	5.2	11.7	8.8	6.2	10.6
20	1.9		2.1	0.3	1.6	4.3	1.6	2.5
21	5.4	4.7	8.5	2.1	4.9	10.2	12.1	7.1
NC	2.6	0.7	2.6	1.7	4.0	1.0	3.1	2.7
All Types	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

LEGEND

1. STR 2. STR SOL 3. STR REA 4. STR REA REA...
5. STR SOL RES 6. STR SOL RES RES... 7. STR SOL REA
8. STR SOL REA REA... 9. STR SOL RES REA
10. STR SOL RES REA REA... 11. STR SOL RES REA RES...
12. STR SOL RES REA RES... REA.... 13. SOL 14. SOL RES
15. SOL RES RES... 16. SOL REA 17. SOL REA REA...
18. SOL RES REA 19. SOL RES REA REA... 20. SOL RES REA RES...
21. SOL RES REA RES... REA... NC NOT CODABLE

TABLE 31

CYCLE ACTIVITY INDEXES FOR EACH OF FIFTEEN CLASSES AND FOR ALL CLASSES COMBINED

Class	Session I	Session II	Session III	Session IV	Unit
All Combined	1.9	1.9	1.9	1.4	1.8
1	2.4	3.8	2.9	2.2	2.9
2	1.8	1.8	2.3	1.5	1.9
3	1.9	2.1	1.3	1.2	1.6
4	2.5	1.8	1.8	1.4	1.9
5	1.7	2.0	1.8	1.8	1.8
6	1.0	1.2	1.2	1.2	1.2
7	2.1	1.4	2.2	1.7	1.8
8	2.3	2.3	1.5	1.5	1.9
9	0.9	0.9	1.0	0.9	0.9
10	1.2	1.5	1.4	0.9	1.2
11	1.7	1.7	2.4	0.9	1.6
12	1.5	1.5	1.6	1.6	1.6
13	2.7	3.4	2.8	3.0	3.0
14	1.5	1.3	1.1	0.6	1.1
15	2.7	2.9	3.4	1.3	2.6

TABLE 32

PERCENTAGE DISTRIBUTION OF TEACHER INITIATED CYCLES FOR EACH OF FIFTEEN CLASSES AND FOR ALL CLASSES COMBINED

Class	Session				Unit of Four Sessions
	I	II	III	IV	
1	97.1	93.4	90.6	90.9	93.1
2	87.1	91.7	91.1	89.8	90.0
3	94.6	93.5	86.6	74.5	89.3
4	93.8	80.3	94.5	79.6	88.0
5	80.0	56.9	71.6	36.9	61.2
6	100.0	90.2	87.0	92.7	92.1
7	84.6	60.9	73.7	85.4	77.4
8	82.1	84.6	72.1	86.7	82.4
9	100.0	92.5	100.0	93.9	96.6
10	95.1	92.0	79.3	85.4	88.5
11	98.7	96.1	93.9	67.6	92.4
12	78.0	73.7	63.1	76.6	72.1
13	89.6	92.6	75.5	91.6	87.4
14	86.6	92.9	87.9	49.9	83.8
15	59.6	84.0	87.6	60.3	75.1
$\bar{X}$	87.3	87.2	83.4	74.2	84.5

cycle 18, while in Class 4, both cycles occur in approximately equal proportion. There are other minor differences, but these two classes are stylistically similar insofar as the major elements of classroom linguistic behavior are concerned.

Because the number of classes in the present sample is small, it is not possible to establish these pairings extensively. Classes 1 and 13, for example, share an extremely high cycle activity index and similar percentages of pupil-initiated cycles. Their cycle patterns differ significantly, however, in percentage of cycle 18 (SOL RES REA). For Class 1, the percentage of cycle 18 is 40 per cent of all cycles; for Class 13 it is 26 per cent of cycles. These contrasting figures indicate an important stylistic difference.

PHASE TWO: TEMPORALLY-ORDERED TEACHING CYCLES

The basic accounting of the patterning of pedagogical moves developed in phase one of the teaching-cycle analysis led to speculation about the possibility of identifying even larger patterns of pedagogical moves. One line of investigation in phase two sought to determine whether certain cyclical patterns and dimensions of cycles tend to influence the subsequent patterning of pedagogical moves. Statistically, this was described through a Markov chain to determine the transition probabilities of moving from one state to another. (9) Taking types of teaching cycles as states, the probabilities of moving from one type of cycle to another were investigated as a way of determining whether one pattern of pedagogical moves tends to influence immediately subsequent patterning.

Basic Framework

In order to accomplish this type of analysis, emphasis was placed not on the formal ordering of the discourse as in phase one, but on the strictly temporal ordering of the cyclical patterns. This procedure necessitated a minor respecification of the concept of teaching cycles. For purposes of the analysis, teaching cycles were defined as beginning either with a structuring move or with a soliciting move which was not preceded by a structuring and continuing until the last reflexive move (responding or reacting) occurs

Formally-ordered teaching cycles and temporally-ordered teaching cycles attempt to account for the patterning of pedagogical moves in slightly different ways. The former regards each new structuring move or unstructured solicitation as the beginning of a new cycle, while the latter occasionally subsumes certain initiatory moves when they occur within a larger patterning. Formally-ordered cycles preserve integrity of form by treating every initiating move as beginning a new cycle and by reconstructing the discourse in order to achieve it.

Temporally-ordered teaching cycles preserve integrity of time by adhering strictly to the temporal sequence of the cyclical patterns even if this involves the occasional subsumption of minor initiatory moves. Those relatively few cycles that incorporate minor cycles are described as augmented cycles, of which there are three types.

Type 1 Repeating. Occasionally, the teacher or the pupil finds it necessary to request repetition of certain moves. When a speaker solicits "repeating" within a previously established cycle pattern, the cycle is described as an augmented cycle of Type 1.

Example

Pupil (SOL) : Now these radios, they would have a quota on them, wouldn't they?
Teacher (SOL) : They'd have a what?
Pupil (RES) : A quota.
Teacher (RES-M3): They might, I don't really know whether radios do or not -- transistor radios.

In contrast to formally-ordered teaching cycles which would reconstruct this exchange as two SOL-RES cycles, temporally-ordered teaching cycles regard these four moves as one SOL-RES cycle which has been augmented by repeating moves.

Type 2 Directing Performance. A second type of augmentation occurs when a teacher or pupil, within the context of a larger cycle, directs someone to do something which does not involve audible language. Although a solicitation, such a directing move is not regarded as initiating a new cycle, but is subsumed within the larger cycle which is coded as an augmented cycle, Type 2.

Example

Teacher (SOL) : Now, what is, what are the things of the home that are mass-produced in America that form a great per cent of our foreign export, Carol?
Pupil (RES) : Electrical appliances.
Teacher (REA) : Right.
Teacher (SOL) : Now put that down on your list.
Teacher (REA-M): This covers a great many things that are only produced or specialized by American industry. We specialize in it. We don't...I don't say we only produce all of these things, but we do specialize in them, and they form a big per cent of our foreign trade.

This interchange is also coded as a single cycle (SOL RES REA REA...) despite the fact that a solicitation directing the pupils to do something intervened. (The first reaction is an evaluation of the previous response; the second, an underlined REA, indicates a reaction occasioned by one or more moves in addition to that response.)

Type 3 Clarifying-Expanding. The third type of augmentation occurs when terms, statements, or ideas are clarified or extended within the context of an ongoing teaching cycle. Again, no new cycle is indicated in these instances, but a subscript is added to the coding of the ongoing cycle to show augmentation of this type.

Example

Teacher (SOL) : What Americans would you think who would still be against it (Kennedy trade bill) despite the arguments that we have brought out this period for it? What Americans would still be against it regardless of the arguments we have brought out, Frank?

Pupil (SOL) : You mean which party or which class of people?

Teacher (RES) : Either way.

Pupil (RES-M3): Well, I feel the Republicans are still....As you look back in history, the Republicans have always been concerned with high tariffs. You know, they have always wanted high tariffs and never wanted them lower whereas, the Democrats always seem to favor a low tariff. And the last time we had a low tariff was during the term of Roosevelt. Ever since then, there was a high tariff until Kennedy took, you know, until he took the power of his administration, and there is a low tariff now -- so....

Teacher (REA) : So that, therefore, you feel that more Republicans than Democrats would be opposed to the proposal on the grounds that Republicans have traditionally, as we look back into history, the Republican Party more than the Democratic Party, has pushed a high tariff.

Despite the fact that a SOL RES exchange takes place during the cycle, only one (SOL RES REA) cycle is coded, but with the subscript 3 indicating that the cycle is augmented by expanding-clarifying moves.

Of the 364 augmented teaching cycles, 130 are Type 1 (Repeating), 66 are Type 2 (Directing Performance), and 168 are Type 3 (Clarifying-Expanding).

Analysis

The analysis of temporally-ordered teaching cycles proceeded in terms of three dimensions: the initiator of the cycle, the logic of the cycle, and the type of cycle. In each one, a Markov matrix was used to determine whether and in what ways prior states influenced following states.

Initiator of the Cycle. The initiator of the cycle was determined, as in the case of formally-ordered teaching cycles, on the basis of who (teacher, pupil, or audio-visual device) delivers the initiatory move. For the fifteen classes, the teacher initiates 85.0 per cent of the cycles, the pupil initiates 14.7 per cent, and audio-visual devices are used to initiate 0.3 per cent. These figures are almost exactly the same as for formally-ordered teaching cycles (Table 32) where the mean percentage for teacher-initiated cycles is 84.5 per cent. Examination of Table 33 indicates, however, that once the prior states in terms of cycle initiation are known, the percentages change. For the 15 classes as a whole, the chance that one teacher-initiated cycle will follow another teacher-initiated cycle is approximately 90 per cent, while the chance that a pupil-initiated cycle will follow a teacher-initiated cycle is about 10 per cent.

These percentages change significantly when a pupil-initiated cycle is the prior state. In this case, the chance of the following state being a teacher-initiated cycle is only about 60 per cent and the chance of a pupil-initiated cycle occurring rises to 40 per cent. Pupil-initiated teaching cycles are, then, four times more likely to occur when they are preceded by other pupil-initiated cycles than when they are preceded by a teacher-initiated cycle in the present sample. One may hypothesize that if a teacher wishes to encourage pupil participation, he should find some means of having a student initiate a cycle. In this manner, he would strongly increase the probability of subsequent student initiation since a prior pupil-initiated cycle seems to invite subsequent pupil-initiated cycles to a far greater extent than does a teacher-initiated cycle.

Another significant feature indicated in Table 33 is the relatively wide range among the fifteen teachers in the present sample. The highest percentage of teacher initiation following another teacher initiation is 96.3 per cent for Class 9, while the lowest is 75.5 per cent for Class 5. Class 5 also has the highest percentage of pupil-initiated cycles following pupil-initiated cycles (59.3 per cent), while Class 2 is lowest in this respect (15 per cent). Generally speaking, then, the teacher in Class 9 rarely admits a pupil-initiated teaching cycle into the discourse once he himself has initiated one. This probably is a

TABLE 33

PERCENTAGE DISTRIBUTION OF TEMPORALLY-ORDERED TEACHING CYCLES BY INITIATOR OF PRECEDING AND FOLLOWING CYCLES FOR EACH OF FIFTEEN CLASSES AND FOR ALL CLASSES COMBINED

Class	Preceding Cycle	Following Cycle Per Cent			Preceding Cycle	Following Cycle Frequency		
		T	P	A		T	P	A
Total	T	89.5	10.4	0.1	T	3104	360	3
	P	59.4	40.6	0	P	357	244	0
	A	15.4	0	84.6	A	2	0	11
1	T	94.7	5.3	0	T	378	21	0
	P	84.0	16.0	0	P	21	4	0
	A	0	0	0	A	0	0	0
2	T	92.0	7.6	0.4	T	207	17	1
	P	85.0	15.0	0	P	17	3	0
	A	100.0	0	0	A	1	0	0
3	T	89.5	10.5	0	T	214	25	0
	P	73.5	26.5	0	P	25	9	0
	A	0	0	0	A	0	0	0
4	T	90.2	9.8	0	T	185	20	0
	P	83.3	16.7	0	P	20	4	0
	A	0	0	0	A	0	0	0
5	T	75.5	24.5	0	T	117	38	0
	P	39.8	59.2	0	P	37	56	0
	A	0	0	0	A	0	0	0
6	T	94.8	5.2	0	T	165	9	0
	P	66.7	33.3	0	P	9	6	0
	A	0	0	0	A	0	0	0
7	T	86.1	13.9	0	T	167	27	0
	P	48.2	51.8	0	P	27	29	0
	A	0	0	0	A	0	0	0

(Table continued on next page)

TABLE 33 (continued)

PERCENTAGE DISTRIBUTION OF TEMPORALLY-ORDERED TEACHING CYCLES BY INITIATOR OF PRECEDING AND FOLLOWING CYCLES FOR EACH OF FIFTEEN CLASSES AND FOR ALL CLASSES COMBINED

Class	Preceding	Following Cycle Per Cent			Preceding	Following Cycle Frequency		
	Cycle	T	P	A	Cycle	T	P	A
8	T	85.7	14.3	0	T	204	34	0
	P	69.4	30.6	0	P	33	15	0
	A	0	0	0	A	0	0	0
9	T	96.3	3.7	0	T	130	5	0
	P	83.3	16.7	0	P	5	1	0
	A	0	0	0	A	0	0	0
10	T	93.9	6.1	0	T	185	12	0
	P	63.2	36.8	0	P	12	7	0
	A	0	0	0	A	0	0	0
11	T	95.2	4.8	0	T	236	12	0
	P	57.1	42.9	0	P	12	9	0
	A	0	0	0	A	0	0	0
12	T	76.3	23.7	0	T	119	37	0
	P	63.8	36.2	0	P	37	21	0
	A	0	0	0	A	0	0	0
13	T	91.3	8.7	0	T	408	39	0
	P	58.8	41.2	0	P	40	28	0
	A	0	0	0	A	0	0	0
14	T	88.5	11.1	0.4	T	184	23	1
	P	77.8	22.2	0	P	21	6	0
	A	0	0	0	A	0	0	0
15	T	83.0	16.6	92.3	T	205	41	12
	P	47.1	52.9	0	P	41	46	0
	A	7.7	0	0	A	1	0	0

function of the ground rules which govern verbal behavior in that particular classroom. Apparently students consider it improper or inadvisable to interject questions or otherwise to inaugurate verbal interchanges once the teacher has done so. In contrast, in Class 5 there is a relatively high probability of one chance in four that a teacher-initiated cycle will be followed by a pupil-initiated cycle. Apparently pupils feel much freer here to inaugurate new cycles by asking questions and occasionally by making structuring moves.

Supporting this observation is the fact that once a pupil has initiated such a verbal exchange -- broken the ice so to speak -- either the same pupil or one of the other pupils is actually more likely to initiate the subsequent cycle than is the teacher. This is remarkable in terms of the overall ratio of teacher-to-pupil-initiated cycles, which is roughly 6:1. In contrast to Class 5 is Class 2 where pupils are apparently reluctant to follow a pupil-initiation of a cycle with a subsequent pupil-initiated cycle. Another way of interpreting these data is to say that low percentages in pupil-initiated cycles following pupil-initiated cycles, as in the case of Classes 2, 1, 9, and 4, indicate a stronger than usual tendency for the teachers to continue to initiate cycles even when pupil-initiated cycles occur from time to time.

Logic of the Cycle. The second dimension of the analysis of temporally-ordered teaching cycles is the logic of the cycle. For purposes of this analysis, the logic of the cycle was taken to be the type of logical meaning of the soliciting move within the cycle. As indicated previously, the soliciting move is a pivotal one in the cycle since it elicits the response which in turn usually occasions the reaction, and the structuring move is often used to introduce the solicitation. In a typical teaching cycle, for example, a teacher asks for an explanation, the pupil responds by giving an explanation, and the teacher reacts by evaluating the response. This is regarded as an explaining cycle since its logical character is, in a sense, determined by the solicitation. Those teaching cycles in which a solicitation does not appear, for example, STR REA, are coded as having no overt expectation (NOE).

Table 34 presents the percentage distribution for the logical dimension of temporally-ordered teaching cycles indicating the preceding and following states. The pattern is not unlike the one for initiation of cycles. Teaching cycles of a given logical character tend to be followed by teaching cycles of the same logical character to a greater extent than would be indicated by the overall percentage distribution. For example, of the 4,081 temporally-ordered teaching cycles, 408, or 10 per cent, include soliciting moves that call for a definition (DEF) and are therefore regarded as defining cycles. When the prior state is a defining cycle, however, the probability of another defining cycle occurring increases to slightly over 40 per cent. A defining cycle, therefore, is much more likely to occur when the preceding cycle was a defining cycle than when the preceding cycle was of some other logical type.

TABLE 34

PERCENTAGE DISTRIBUTION OF TEMPORALLY-ORDERED CYCLES BY LOGICAL PROCESS ACCORDING TO LOGICAL PROCESS OF PRECEDING CYCLES FOR ALL CLASSES COMBINED

Logical Process of Preceding Cycle	Logical Process of Following Cycle												
	1 DEF	2 INT	3 FAC	4 XPL	5 OPN	6 JUS	7 NCL	8 INS	9 NOE	10 NOC	Total %	Total f	% of Total Cycle
1. DEF	40.2	0.5	19.1	24.8	1.7	0.2	0	11.3	2.0	0.2	100.0	408	10.0
2. INT	7.4	18.5	22.2	33.3	5.6	1.8	0	9.3	0	1.9	100.0	54	1.3
3. FAC	7.4	1.0	49.3	25.7	1.4	0.5	0.1	10.7	3.6	0.3	100.0	1137	27.9
4. XPL	6.4	1.0	21.5	56.2	2.1	0.7	0.1	9.1	2.6	0.3	100.0	1356	33.2
5. OPN	2.6	0	20.0	23.5	28.7	8.7	0	12.2	4.3	0	100.0	115	2.8
6. JUS	0	0	14.9	19.1	12.8	27.7	0	23.4	2.1	0	100.0	47	1.2
7. NCL	0	0	0	66.7	0	0	0	33.3	0	0	100.0	3	0.1
8. INS	6.1	1.8	16.6	15.2	2.3	0.9	0.1	49.8	6.0	1.2	100.0	755	18.5
9. NOE	7.6	1.1	18.4	12.4	3.2	1.1	0	23.8	31.4	1.1	100.0	185	4.5
10. NOC	4.8	0	28.6	28.6	0	0	0	33.3	4.8	0	100.0	21	0.5
Total	-	-	-	-	-	-	-	-	-	-	-	4081	100.0

Essentially the same is true for the other logical types. For example, of all the logical dimensions of teaching cycles, explaining (XPL) is the most common, accounting for 33.2 per cent of all cycles. When the preceding state is an explaining cycle, the probability that another explaining cycle will occur increases to 56.2 per cent. The same tendency is present even in the instructional category (INS) which includes all those cycles that are devoted to matters of classroom management, such as assignments, rather than substantive matters relating to international trade. As a matter of fact, in every one of the logical dimensions in which there are significant frequencies, there is a greater probability of cycles of the same logical character following one another than one would expect on the basis of the overall percentage distribution.

This approach provides still another basis for analyzing classroom discourse. All consecutive temporally-ordered teaching cycles of the same logical dimension may be seen as constituting one unit of linguistic behavior, possibly a tactic, that continues until a new logical dimension is introduced. Thus a teaching tactic may consist of a series of teaching cycles designed to explain why countries trade. When the teacher shifts, let us say, from explaining why trade takes place to defining certain terms, the shift may be regarded as the beginning of a new tactic.

An alternative way to conceive of logically-ordered tactics in teaching would be to collapse the logical categories of fact stating and explaining, defining and interpreting, and opining and justifying into three logical modes: the empirical, the analytic, and the evaluative. These logical modes in conjunction with a refined system for analyzing the substantive meanings expressed in the classroom might constitute a fruitful way of analyzing the tactics that teachers employ to induce learning. One kind of tactic, for example, may be characterized as dealing analytically with terms such as imports and exports. This may be followed by a tactic in which the discussion centers on expressing opinions and justifying them with respect to whether the United States should export to Communist countries.

Cycle Types. One finds basically the same tendency for prior states to influence following states when one considers the third dimension of teaching cycles, cycle type. For ease of presentation, Table 35 indicates the ten most frequently observed cycle types along with an eleventh category comprising the eleven infrequently observed cycle types and those few that were not codable as to cycle type because of a partially inaudible transcription.

As in the case of formally-ordered teaching cycles, the cycle SOL RES REA occurs most frequently, accounting for 27.6 per cent of the total of 4,081 temporally-ordered cycles. (The comparable figure for formally-ordered teaching cycles is 26.0 per cent.) The next most common cycle is again the simple SOL RES which accounts for 19.3 per cent of the total.

TABLE 35

PERCENTAGE DISTRIBUTION OF TEMPORALLY-ORDERED TEACHING CYCLES BY CYCLE TYPE OF THE PRECEDING AND FOLLOWING CYCLES FOR ALL CLASSES COMBINED

Type of Preceding Cycle	Type of Following Cycle 1	2	3	4	5	6	7	8	9	10	11	Total %	Total f	% of Total Cycle
1	17.9	3.0	25.6	2.7	14.1	9.8	5.4	0.7	3.4	2.4	15.2	100.0	297	7.3
2	2.9	17.7	1.5	13.2	2.9	17.6	0.0	1.5	1.5	4.4	36.8	100.0	68	1.7
3	7.4	1.0	28.0	1.5	28.1	2.9	11.3	0.3	7.1	0.7	11.7	100.0	789	19.3
4	6.1	1.4	22.5	2.7	32.0	6.8	8.8	3.4	4.1	2.0	10.2	100.0	147	3.6
5	5.0	1.1	17.2	2.1	35.0	6.1	10.6	1.2	9.6	1.8	10.3	100.0	1127	27.6
6	4.2	2.3	13.7	4.9	36.5	10.7	6.1	0.4	7.6	1.1	12.5	100.0	263	6.5
7	8.8	2.2	12.9	6.7	25.8	5.0	14.1	0.7	7.2	3.4	13.2	100.0	418	10.2
8	5.0	7.5	12.5	5.0	17.5	12.5	10.0	5.0	7.5	2.5	15.0	100.0	40	1.0
9	2.6	2.3	14.8	2.9	26.8	8.0	11.6	1.3	12.6	2.9	14.2	100.0	310	7.6
10	6.4	1.3	16.7	5.1	19.2	9.0	15.4	1.3	9.0	0.0	16.6	100.0	78	1.9
11	10.8	1.8	21.2	4.8	21.0	4.6	10.1	0.7	6.1	1.8	17.1	100.0	544	13.3
Total	-	-	-	-	-	-	-	-	-	-	-	-	4081	100.0

LEGEND

1. SOL 2. STR 3. SOL RES 4. STR SOL RES 5. SOL RES REA
6. STR SOL RES REA 7. SOL RES REA REA... 8. STR SOL RES REA REA...
9. SOL RES REA RES... REA... 10. STR SOL RES REA RES... REA... 11. All Others

When the preceding states are taken into account, however, these figures again change significantly. When the preceding state is a SOL RES, the probability of a SOL RES REA following was only 17.2 per cent as compared to 26.7 per cent in the overall distribution. But when SOL RES REA is the preceding state, it is followed by another SOL RES REA to the extent of 35.0 per cent. Whereas the chances of a SOL RES REA occurring are approximately one in four in the overall distribution, the probability of a SOL RES REA occurring when another SOL RES REA is the preceding state is one in three. Furthermore, in the present sample, there is twice the likelihood of a SOL RES REA cycle following another SOL RES REA cycle as there is of a SOL RES REA following a SOL RES cycle. Similarly, when the preceding state is a SOL RES cycle, the probability of another SOL RES occurring increases from the 19.3 per cent that one would expect from the overall percentage distribution to 28.0 per cent.

Table 36 combines two of the dimensions already discussed. It presents the distribution of cycle type by initiator of the cycle. For ease of presentation, the cycles initiated by audio-visual devices, which accounted for only 0.3 per cent of the cycles, are not included in the table. Of the thirteen instances of audio-visual-initiated cycles, one occurred in Class 14 and the other twelve in Class 15.

Generally speaking, Table 36 reinforces the pattern indicated by Tables C5 and C7. Of the 4,081 cycles, 1,090 or 26.7 per cent were teacher-initiated SOL RES REA cycles. Teacher-initiated SOL RES cycles account for the second highest percentage, 13.4 per cent. Typically, then, the teacher solicits and the pupil responds. In addition, however, for the fifteen classes as a whole, the teachers are twice as likely to react in some form to these responding moves than they are to initiate a new teaching cycle following the response without supplying a reacting move. This is suggested by the 2:1 ratio of teacher-initiated SOL RES REA cycles to teacher-initiated SOL RES cycles.

The pattern is quite different when one considers pupil-initiated cycles. The highest percentage of pupil-initiated cycles is 5.9 per cent for the SOL RES cycle, while the pupil-initiated SOL RES REA cycle accounts for only 0.9 per cent of the total. Generally, then, when the pupil initiates cycles in the classes under study, the verbal pattern tends to be of the simple soliciting-responding variety and rarely includes the reacting move which is characteristic of teacher-initiated cycles. This reinforces the notion that one of the general rules for pupil behavior in the classroom is that the pupil rarely comments upon or rates the responding moves he elicits.

The second highest percentage of pupil-initiated cycles is in the "all others" category (3.4 per cent) indicating that pupil-initiated cycles have a tendency to follow unusual patterns such as SOL REA and STR REA REA... to a greater extent, proportionately, than do teacher-initiated cycles. Only two of the eleven cycles included in the "all others" category, for example, include responding moves. For the present sample, therefore, pupil-initiated cycles not only account for a far smaller percentage of the total than do teacher-initiated cycles, but also tend to be distributed differently. In terms of the temporal analysis, however, one might still note the tendency for like patterns to cluster together, although the low frequencies make it difficult to generalize.

Summary

The data point to the fact that pedagogical discourse seems to follow regular rather than haphazard patterns. Certain regularities, such as following a basic soliciting-responding pattern in teaching, seem to be common to all of the fifteen classes in the sample. Other regularities, such as the rate at which verbal exchanges take place, are basically consistent from one session to another within a given class, but vary from one class to the next. This latter kind of patterning which sets some classes apart from others may be seen as constituting classroom style. Once these regularities are identified, both in terms of teaching in general and in terms of individual classrooms, the relationships among the events which comprise the pattern become the basis for prediction.

In all of the dimensions of teaching cycles analyzed by means of the Markov chain, a kind of inertia seems to exist by which each of the states tends to be followed by another state with the same characteristics. A pupil-initiated cycle tends to give rise to a subsequent pupil-initiated cycle; a teaching cycle of a given logical character tends to give rise to another cycle of the same logical character; and each of the cycle types, as well as cycle type in combination with initiator, tend to be followed by cycles with the same characteristics to a greater extent than would be indicated by the overall percentage distribution of these cycle dimensions. It is as if each of the states possessed some kind of internal dynamic which tends to influence the characteristics of subsequent cycles.

This tendency for cycle states to perpetuate themselves has the effect of increasing one's ability accurately to predict certain linguistic events in the classroom. If, for example, ten observers were to enter ten different classrooms in the present sample while classes were in session, one could predict with reasonable accuracy that one of the ten ongoing verbal exchanges between the teacher and the pupils would involve definition of terms. If, however, one knew that in each case the preceding teaching cycle had been a defining cycle, one could then place the odds at four in ten that the subsequent cycle would also involve defining. The temporal analysis, then, by establishing statistical relationships between prior and following states defined here as teaching cycles, permits a more refined description of classroom verbal behavior by greatly improving one's ability to see relationships among classroom variables.

TABLE 36

PERCENTAGE DISTRIBUTION OF TEMPORALLY-ORDERED TEACHING CYCLES BY INITIATOR AND CYCLE TYPE FOR PRECEDING AND FOLLOWING CYCLES FOR ALL CLASSES COMBINED

Type of Preceding Cycle		Total		Type of Following Cycle									
				1		2		3		4		5	
		%	f	T	P	T	P	T	P	T	P	T	P
1	T	6.2	254	34	11	8	1	20	45	7	1	30	4
	P	1.1	43	5	3	0	0	9	2	0	0	8	0
2	T	1.4	7	1	0	7	4	0	0	7	1	0	0
	P	0.2	10	0	1	0	0	1	0	0	1	2	0
3	T	13.4	548	23	5	1	0	138	9	2	0	187	1
	P	5.9	240	27	3	7	0	23	50	7	3	27	7
4	T	3.2	130	9	0	1	1	20	6	2	0	44	1
	P	0.4	17	0	0	0	0	4	3	0	2	1	1
5	T	26.7	1090	48	3	12	0	154	32	21	0	382	6
	P	0.9	37	6	0	0	0	3	5	3	0	4	2
6	T	6.2	255	10	1	6	0	30	4	13	0	92	1
	P	0.2	8	0	0	0	0	0	2	0	0	3	0
7	T	8.2	333	17	5	6	1	24	16	22	1	90	1
	P	2.1	85	11	4	2	0	3	11	4	1	12	5
8	T	0.9	35	2	0	3	0	3	1	1	1	5	1
	P	0.1	5	0	0	0	0	1	0	0	0	1	0
9	T	7.3	297	7	1	5	1	34	9	9	0	78	1
	P	0.3	13	0	0	1	0	2	0	0	0	3	1
10	T	1.8	74	5	0	1	0	10	3	3	1	15	0
	P	0.1	4	0	0	0	0	0	0	0	0	0	0
11	T	9.7	394	42	4	4	1	53	27	18	0	97	3
	P	3.4	139	12	1	3	1	16	19	3	5	12	2
		100.0	4081										

LEGEND

1. SOL 2. STR 3. SOL RES 4. STR SOL RES 5. SOL RES REA
6. STR SOL RES REA 7. SOL RES REA REA... 8. STR SOL RES REA REA...
9. SOL RES REA RES... REA... 10. STR SOL RES REA RES... REA... 11. All Others

(Table continued on next page)

TABLE 36 (continued)

PERCENTAGE DISTRIBUTION OF TEMPORALLY-ORDERED TEACHING CYCLES BY INITIATOR AND CYCLE TYPE FOR PRECEDING AND FOLLOWING CYCLES FOR ALL CLASSES COMBINED

Type of Preceding Cycle		Type of Following Cycle											
		6		7		8		9		10		11	
		T	P	T	P	T	P	T	P	T	P	T	P
1	T	25	3	7	6	1	1	4	1	6	1	24	14
	P	1	0	0	3	0	0	5	0	0	0	6	1
2	T	12	0	0	0	1	0	0	0	3	0	8	12
	P	0	0	0	0	0	0	1	0	0	0	0	4
3	T	8	0	61	5	1	0	49	0	5	0	45	8
	P	13	2	8	15	1	0	5	2	1	0	17	22
4	T	10	0	8	2	4	0	6	0	3	0	11	2
	P	0	0	0	3	0	1	0	0	0	0	0	2
5	T	65	0	103	13	12	1	103	2	20	0	101	12
	P	4	0	0	3	1	0	2	1	0	0	2	1
6	T	28	0	16	0	1	0	19	1	3	0	28	2
	P	0	0	0	0	0	0	0	0	0	0	1	2
7	T	19	0	34	9	2	1	24	3	11	1	34	12
	P	2	0	8	8	0	0	3	0	2	0	5	4
8	T	5	0	1	3	2	0	2	1	1	0	2	1
	P	0	0	0	0	0	0	0	0	0	0	2	1
9	T	24	1	29	5	4	0	38	0	8	0	35	7
	P	0	0	1	1	0	0	1	0	1	0	2	0
10	T	6	0	10	1	1	0	6	0	0	0	11	1
	P	1	0	1	0	0	0	1	0	0	0	1	0
11	T	16	0	37	1	3	1	25	1	6	0	44	10
	P	7	2	9	8	0	0	6	1	2	2	8	20

LEGEND

1. SOL 2. STR 3. SOL RES 4. STR SOL RES 5. SOL RES REA
6. STR SOL RES REA 7. SOL RES REA REA... 8. STR SOL RES REA REA...
9. SOL RES REA RES... REA... 10. STR SOL RES REA RES... REA...
11. All Others

This refined ability to predict is probably best illustrated in terms of initiation of teaching cycles. By using data such as frequency and percentage distributions in combination with Markov matrices, one can describe not only the relative proportion of teacher-to-pupil-initiated cycles, but the probabilities of certain linguistic events following certain other linguistic events. In terms of simple frequency for the group of fifteen teachers, teacher-initiated cycles far outnumber pupil initiated cycles; but when the preceding state is a pupil-initiated cycle, another pupil-initiated cycle is almost as likely to occur as a teacher-initiated cycle. For one class of the fifteen, the probability of a pupil-initiated cycle occurring under these circumstances is even somewhat greater than for a teacher-initiated cycle. While it is not possible to generalize the present data to all kinds of teaching on all levels, the regularities in the patterning of classroom discourse in the present sample suggest the hypothesis that similar kinds of regularities may be found in other samples of classroom verbal behavior.

In another sense, the analysis of teaching cycles using the Markov chain permits one to broaden the study of the sequence of verbal exchanges in the classroom instead of limiting the analysis to the individual teaching cycles themselves. Just as the notion of teaching cycles permits analysis of patterns of pedagogical moves, the Markov chain makes possible the analysis of the patterning of teaching cycles. Using this technique, it is possible, for example, to study typical sequences of teaching cycles and to compare and contrast the patterns in individual classes. For any of the dimensions of classroom verbal behavior investigated here, entire class sessions may be plotted showing movement from one kind of patterning to another.

From the point of view of research design, one significant outcome of the temporal analysis is the manner in which the basic units of the present research can be manipulated, combined, and extended in many ways and for a wide variety of purposes. The key to this flexibility and adaptability is the concept of the pedagogical move. At first, structuring, soliciting, responding and reacting served principally as the basic units for analyzing various dimensions of the discourse. Not only did these moves describe what teachers and pupils were doing pedagogically, but they constituted reliable units of classroom verbal behavior on the basis of which the analysis of the logical and substantive dimensions of classroom language could proceed. Later, pedagogical moves were combined into teaching cycles which permitted the study of the sequence of pedagogical moves and stylistic differences in terms of various dimensions of classroom discourse such as rate, source, and pattern. In phase two, teaching cycles formed the basis of the analysis of still broader patterns of pedagogical discourse using a Markov chain. Such an analysis would not have been possible unless clearly defined units were available to serve as links in the chain.

CHAPTER SEVEN

DISCUSSION OF RESULTS: THE LANGUAGE GAME OF TEACHING

Within the theoretical framework of this research, the results reported in the preceding four chapters may be discussed in terms of the rules of the classroom game of teaching. Even though teachers rarely state the rules explicitly, and although classes differ somewhat in details, the results indicate that common elements underlie much of the teaching game, in that pupils and teachers follow a set of implicit rules with few deviations. These rules define the teaching game. It may be useful to summarize these rules explicitly, not as a prescriptive guide to teacher behavior, but rather as a descriptive model of what actually occurs in classrooms like those in the present study. The general rules of the game and the specific rules for pedagogical moves and teaching cycles within the game represent the results both of the first and of the second phases of the research.

GENERAL RULES OF THE CLASSROOM GAME

The classroom game involves one person called a teacher and one or more persons called pupils. The object of the game in the classrooms observed is to carry on a discourse about subject matter, and the final payoff of the game is measured in terms of the amount of learning displayed by the pupils after a given period of play. In playing the game, the players follow a set of complementary rules. If one plays the role of teacher in this game, he follows one set of rules; if one plays the role of pupil, he follows a somewhat different set of rules. Some deviations from these rules are permitted, and the subsequent pattern characterizes the player's individual style of play. These deviations, however, are relatively minor in comparison with the general system of expectations. In fact, the basic rule is that if one is to play the game at all, he will consistently follow the rules specified for his role.

Within the general set of rules that define the game, there are individual differences among classes in style of play. For example, a teacher may play most of the game structuring, while the pupil attends to the structuring and responds whenever called upon to do so. A teacher may, on the other hand, choose to play the game principally as a soliciting-responding exercise; if he so chooses, he is also responsible for reacting to pupil responses. The teacher may even choose a style of play characterized by a larger proportion of reactions than is usually seen in this game. If a pupil is playing the game with such a teacher, his responsibility to react may be almost as compelling as his responsibility to respond.

Within the general rules of the game, the style of play may, therefore, be modified in one way or another. Once the ground rules for a particular game have been set, however, it is wise neither for the teacher nor for the player to assume the other player's role. If one plays the role of teacher, part of his responsibility is to set the ground rules and to see that these rules are obeyed. In this sense, the teacher is expected to serve not only as coach and as one of the players, but also as referee of the game. If one plays the role of pupil, he must learn the ground rules of the game, even if these rules are not explicitly stated by the teacher.

There are five general rules which guide the play of the teacher and the pupil in classrooms like those observed in this research:

1. The basic verbal maneuvers that the teacher and the pupil make in playing the game are pedagogical moves: structuring and soliciting, which are initiatory moves; and responding and reacting, which are reflexive moves. Each of the four types of moves plays a distinctive role in the discourse, and the specific rules covering these moves for the teacher and for the pupil will be presented later. Soliciting, responding and reacting each accounts for slightly less than one-third of the moves in a given classroom, and structuring accounts for the remaining small fraction of moves. In terms of amount of speech (i.e., lines of transcript), reacting accounts for three-eighths of the lines spoken, and the remaining five-eighths is just about equally distributed among the remaining three moves.

2. The teacher is the most active player in the game. He makes the most moves; he speaks most frequently; and his speeches usually are the longest. He is permitted some flexibility in the exact amount by which his activity exceeds the total activity of all pupil players, but in general the ratio of his speech to the speech of all other players is approximately 3 to 1 in terms of lines spoken, and 3 to 2 in terms of the number of moves made. Moreover, these ratios remain constant over several class sessions, unless the teacher directs another player to assume his role temporarily.

3. If the game is played within the field of economics, the major part of the game is played with substantive meanings specified by the teacher's structuring of the game. From time to time, however, players are permitted to depart from this central focus, sometimes to topics tangential to the substantive material of the game and occasionally to a topic that is irrelevant to the subject matter under study. The teacher usually initiates these off-target discussions, sometimes as a means of introducing a substantive point. Occasionally, a pupil player introduces an irrelevancy, but he does not do so often in a single class session; the exact frequency depends upon the reactions of the teacher. In general, however, the discussion takes place within the substantive framework of the teacher's structuring.

4. Players generally use the empirical mode of thought (fact stating and explaining) in dealing with the substantive material under discussion. The analytic mode (defining terms and interpreting statements) is used much less frequently. The frequency of evaluative statements (opining and justifying) is also relatively low in comparison to empirical statements; that is, expressions of personal opinion about economic policies or attempts to justify opinions appear rather infrequently. However, players are free to report opinions of others, such as public officials, or to report the arguments used by others to justify their opinions. This does not mean that players are completely prohibited from expressing their own opinions and justifications, but that the general rules under which the game is played encourage the use of the empirical mode of thought.

5. In gauging wins and losses, players should keep in mind that this is not a game in which one player, such as the teacher, wins, while another player, such as one of the pupils, loses. Rather, there are relative degrees of winning and losing, and the teacher's winnings are a function of the pupils' performances. This is a peculiar, but important, characteristic of this game. While the teacher undeniably has the greater power and freedom in the course of play, he is ultimately dependent on his pupils for the degree of success he achieves in playing the game.

This feature of the game is a consequence of the criterion of success: the eventual aim of the game, the ostensible reason for playing, is the pupil's learning of substantive and substantive-logical meanings. Learning is usually measured by test performance; the teacher's success depends therefore upon the pupil's test performance. If a pupil fails the test, implying that he has not learned, then the teacher, by implication, has not taught successfully. Thus, insofar as that pupil is concerned, the teacher has lost the game. An individual teacher, of course, typically plays the game with more than one student, so that his wins and losses are scored over the total group of pupils, much as the team point system is used to score track meets. In calculating the results, several test failures may be offset by a number of brilliant test scores, although the precise formula depends upon the educational setting in which the game occurs. For some schools, success requires at least minimal performance by all pupils; in such schools, the teacher's overall score is considerably reduced for even one or two test failures, with proportionately less credit for high test scores. For other schools, a few exceedingly high scores overbalance a substantial number of low test results. In this latter setting, a few special pupil prizes, awarded by outside sources such as "Regents Scholarships" and "Merit Scholarships," may very well counterbalance many failures.

The general formula for computing a teacher's final score cannot be written because the weights assigned to various kinds of test scores depend upon decisions made by people outside the classroom. Principals, superintendents, school board members and the general public help establish the criteria for determining success.

RULES FOR SOLICITING AND RESPONDING

The soliciting-responding pattern comprises the core of the classroom game and accounts for slightly more than three-fifths of all moves made.

Rules for the Teacher

When one plays the role of teacher in classrooms like those observed in this research, he obeys the following rules:

1. The teacher's primary role is that of solicitor: about one-half of his moves are solicitations. Furthermore, the teacher makes a majority of all soliciting moves in the game.

2. In a majority of his soliciting moves, the teacher calls for the performance of a substantive task; that is, in about three-fifths of his moves he attempts to elicit information from pupils about the subject matter under study. In contrast, in approximately two-fifths of his moves he calls for an instructional task, directing pupils to perform activities related to the management of the classroom as a social unit.

3. The teacher generally makes it known that he expects only one pupil to respond at a time, although other interaction patterns are possible. As a major exception to this rule, when the task is an instructional one, he may sometimes expect all pupils to respond in unison; but when the task is a substantive one, he rarely expects pupils to respond in unison unless a vote to indicate opinion is involved.

While the teacher is the only speaker who may expect the agent to perform some activity outside the classroom and/or at some future time, even he does not attempt to elicit such activity very frequently.

4. The teacher seldom calls for the performance of more than one task in a given move. If he chooses to do so, at least one of the tasks is normally a substantive one; only infrequently does he speak a move with more than one instructional task. In his multi-task moves, the teacher expects the same information process in both components, most often constructing, but expects two different logical process activities, usually fact stating and explaining.

5. The teacher elicits information with empirical meaning in over one-half of his soliciting moves, and more often expects explaining than fact stating. He does not frequently expect evaluative meanings; when he does, he expects

opining more often than justifying. When the teacher calls for a response with analytical meaning, and he does so in less than one-fifth of the substantive task moves, he more often calls for defining than for interpreting. With instructional tasks, he most frequently expects extra-logical meanings, especially performing-oral and repeating.

6. When the teacher solicits, he generally expects the information process activity to be constructing. When he does not expect constructing, he more often expects assigning a truth function than constructing/assigning or selecting from alternatives. He shifts from constructing to assigning a truth function most notably when the logical activity involves opining or justifying. When the process of the instructional task is logical rather than extra-logical, the teacher also tends to shift from constructing to assigning a truth function.

7. As the chief solicitor, the teacher normally attempts to keep the game in focus by using three types of moves: substantive task/ explaining/ constructing; substantive task/ fact stating/ constructing; and instructional task/ perform oral/ constructing.

8. The teacher frequently presents clues regarding the terms appropriate to the responding move, especially when the task is a substantive one. The clue most often is a propositional function word and the one he relies upon most heavily is 'what,' although he also frequently uses 'why' and 'which.' He may offer a clue to parallel terms and may even combine this clue with a propositional function. On occasion, he offers combinations of clues; but when he does, he seldom offers more than three clues in one move. The teacher occasionally offers the leading clue (i.e., "Don't you think that...") when the logical process activity involves the evaluative mode.

9. The teacher frequently makes elliptical moves and often makes incomplete moves. Especially with substantive tasks, he interlards information. The teacher is usually the only player to provide amplification in the soliciting move; that is, he attempts to give further clues regarding the information process activity or logical process activity without changing the topic or the task.

10. As a respondent, the teacher may add tasks the pupil does not call for, perform an unexpected information process, or ignore a task. It is characteristic of the teacher to disregard the information process of assigning a truth function when the task is instructional and the process of selecting from alternatives with substantive tasks. More than the pupil, the teacher is likely to respond with logical meanings of an ascending or descending nature; he does not, however, shift from one logical mode to another.

Rules for the Pupil

When one plays the role of the pupil in classrooms like those observed in this research, he follows these rules:

1. The pupil's primary role is that of respondent. He normally devotes about two-thirds of his moves to responding, and he speaks most of the responding moves. When he responds, he usually performs the task and the primary activity expected by the solicitor. He may, however, ignore one of the tasks when there are two in the solicitation. When the pupil's responding move does not reflect primary congruence, the incongruence usually involves a shift from one logical mode to another or some substitution for the information processes of selecting from alternatives and assigning a truth function.

2. The pupil speaks about ten per cent of the solicitations. Like the teacher, he expects substantive tasks in about three-fifths of his moves and instructional tasks in about two-fifths. He almost never presents two tasks in one move. He usually expects empirical meanings, with fact stating almost twice as frequent as explaining. With instructional tasks he seldom expects the extra-logical processes, but he may expect a speaker to repeat a previous move.

3. When the pupil solicits, he most frequently expects the information process of assigning a truth function. The pupil is more likely to expect constructing with an instructional task than with a substantive task. More than the teacher, he expects selecting from alternatives, but the process is not an important one for him.

4. With a substantive task, the pupil is as likely to expect explaining as he is to expect fact stating; but with an instructional task he is almost certain to expect fact stating rather than explaining. He may occasionally expect analytical meanings, most notably interpreting with an instructional task. Evaluative meanings account for more of the pupil's moves than they do for the teacher, but he expects evaluative meanings with instructional tasks rather than with substantive tasks.

5. In his most frequent solicitation the pupil expects a substantive task, the logical process of fact stating, and the information process of assigning a truth function. In his next most frequent solicitation, the pupil expects the performance of a substantive task, the logical process of explaining and the information process of constructing.

6. The pupil seldom provides amplification; that is, he does not attempt to give further clues regarding the primary activities he expects once he has presented the task. When he does offer amplification, the task is a substantive one and the information process is assigning a truth function.

7. The pupil frequently offers clues to terms appropriate for the responding move. Most often he will offer a propositional function word, but he also offers a leading clue for the truth function he expects (e.g., "Don't you think that..."). More than the teacher, he offers clues with instructional tasks.

8. The pupil most often solicits the teacher, rather than a fellow pupil. He never expects the agent to perform outside the classroom or at some future time. He very seldom expects non-linguistic behavior, and never of the teacher. His directive is usually a simple request and he never commands the teacher to act.

RULES FOR STRUCTURING

General Rules

Both the teacher and the pupil in classrooms like those observed in this research obey the following general rules for structuring:

1. Players must keep in mind that structuring is a directive move whose function it is to set the context for classroom behavior by launching or halting-excluding interaction between pupils and teachers. The speaker structures by indicating dimensions of the interaction, such as time, agent, activity, topic and cognitive process, regulations, reasons, and instructional aids. Structuring moves may set the context for the classroom game as a whole and/or for one or more sub-games.

2. Players may structure at any time during the course of play. Participants usually distribute their structuring moves throughout a class session, allowing for a slight clustering at the beginning and at the end of the session.

3. Both the teacher and the pupil usually speak one-component moves; that is, moves that present one set of directives for the entire game or for a single sub-game. The teacher is given some leeway in this matter; on occasion he structures two or more sub-games in a single move, but the "one component per move" rule strictly applies to pupils.

4. Speakers of structuring moves generally set the context for some kind of language activity, most frequently oral activity. Occasionally, a player structures non-oral language activities, such as written assignments; but only rarely does he structure non-language activities, such as the collection of homework and distribution of materials.

Rules for the Teacher

If one plays the role of the teacher in classrooms like those observed in this research, he obeys the following rules for structuring:

1. The teacher structures less than he solicits or reacts but more than he responds. The ratio is approximately one teacher structuring move to 12 other teacher moves. On the average, the teacher speaks longer in a structuring move than in any other move, although the total number of lines spent in structuring is less than in soliciting and in reacting.

2. The teacher most often launches a sub-game that is to begin at once and to continue for only a segment of the class session. This means that he structures sub-games as the class moves along; only infrequently does he structure a series of sub-games for a particular session or for the several sessions that comprise a unit. Rarely does the teacher explicitly halt or exclude a sub-game; rather, he signals the end of one sub-game by launching another.

3. The teacher generally launches a sub-game by announcing a substantive topic and a classroom activity. In addition, he frequently announces who is to be involved in the activity. Occasionally, he specifies the logical process with which participants are to deal with the substantive topic under study.

4. When announcing the activity for a sub-game, the teacher generally states that the class will "talk about," or "take up" a specified topic; rarely is he more specific in indicating the type of oral activity to be engaged in. From experience, the pupil understands that the class will engage in a verbal exchange consisting primarily of soliciting by the teacher and responding by the pupils.

5. Occasionally, the teacher cites regulations, specifies instructional aids, and gives reasons for launching the game or sub-game. The teacher should keep in mind that he, not the pupil, is responsible for specifying regulations and giving reasons.

Rules for the Pupil

If one plays the role of the pupil in classrooms like those observed in this research, he obeys the following rules for structuring:

1. The pupil structures less than he solicits, responds or reacts. The ratio is approximately one structuring move to 60 of his other moves. The pupil speaks self-initiated structuring moves and teacher-assigned structuring moves in the ratio of about 3 to 2.

2. When the pupil structures, he usually launches a sub-game that is to begin immediately and to last for a segment of a session. The pupil rarely launches activities for the entire session or launches more than one sub-game at a time. Under no conditions does he halt or exclude a sub-game; this is the prerogative of the teacher.

3. When the pupil launches on his own initiative, he generally does so by announcing his intention of asking the teacher a question. On the other hand, when he structures in accordance with previous assignment by the teacher, he usually does not announce his topic, but proceeds immediately to speak on the assigned topic. In such assigned structuring moves the pupil speaks for a relatively long period of time.

4. The pupil does not set forth regulations or give reasons for the games or sub-games he structures. He does, however, use or refer to instructional aids such as newspapers, radio, television, or other news media.

RULES FOR REACTING

General Rules

Both the teacher and the pupil in classrooms like those observed in this research obey the following general rules when reacting:

1. Approximately one out of every three moves in the game is a reacting move, and slightly more than one-third of all lines spoken is devoted to reacting.

2. Players use reacting moves to rate (positively or negatively) and/or to modify (by clarifying, synthesizing or expanding) what is said or done during the course of play.

3. Almost all reactions are occasioned by pedagogical moves, although pauses occurring during the discussion and physical actions may also be taken by players as the occasion for reacting. Since any pedagogical move is potentially an occasioning move, speakers of reacting moves may attempt to influence the course of events in the classroom at a time and in a manner of their own choosing. The conditions under which it is considered appropriate for players to react are indicated in the rules specifying the roles of the teacher and the pupil.

4. A player's reaction may be to one or more preceding moves, and a given move may occasion more than one reaction by one or more players.

Rules for the Teacher

If one speaks the role of the teacher in classrooms like those observed in this research, he follows these rules:

1. Approximately two out of every five moves by the teacher will be a reaction, and each reaction will be about three and one-half lines in length.

2. The teacher rarely reacts to his own verbal moves. Practically all teacher reactions are occasioned by pupil moves and most of these are pupil responses. Furthermore, most of the teacher's reactions are occasioned by single pupil moves.

3. The teacher reacts most frequently by rating moves by pupils. Three-fourths of all teacher reactions involve rating, which is one of the most important functions of the teacher in the game. In the majority of instances, the teacher's rating reactions are at least somewhat positive. Frequently he will tell a pupil explicitly that he has made a "correct" or "good" response; in any case, he is expected at least to "admit" the pupil's statement, often by a short phrase such as "all right." When the teacher does react negatively to the pupil, he usually does not make this rating completely negative by reacting with such remarks as "no," or "you're wrong." Rather, he offers some sort of qualifying evaluation, such as "yes, but...," or he points out that the pupil's response was not entirely correct or to the point. This applies to incongruent pupil responses as well as congruent pupil responses.

Rules for the Pupil

If one plays the role of the pupil in classrooms like those observed in this research, he follows these rules:

1. One in every six or seven pupil moves is a reaction. Virtually all pupil reactions are occasioned by single moves.

2. Pupils should keep in mind that they are expected to participate in classroom discussion most frequently when directed to respond to the teacher's solicitation, and that they are usually not expected to enter the discussion again until the teacher has reacted to the response. At that time the pupil may react to the teacher's reactions; occasionally he reacts to responding moves, but much more frequently his reactions are to reacting moves of other participants.

3. The pupil reacts twice as frequently to the teacher as he does to fellow pupils. When he reacts to the teacher, he usually reacts to a teacher reaction; when he reacts to a fellow pupil, he is likely to react to a pupil reaction or response.

4. When the pupil reacts, he does so most frequently by expressing substantive meanings. In contrast, the pupil rarely reacts by rating moves of other participants; rating is definitely a function of the teacher. If the pupil does rate a fellow pupil's response, his rating should not be too strong either in a positive or in a negative direction.

Except under extraordinary circumstances, pupils overtly accept the teacher's statements as the spoken truth. Under no condition is the pupil permitted explicitly to rate a statement made by the teacher; that is, the pupil does not tell the teacher he is right or wrong, that he is doing well or doing badly. If the pupil has impulses in this direction, he must inhibit them, for they have no place in the classroom game.

On the other hand, if one speaks the role of pupil, he must remember that merely uttering a statement does not guarantee that it will be accepted as true. In fact, an important part of the teacher's responsibility is to challenge, though mildly, pupil statements that he believes to be invalid. In certain classes, pupils may even be challenged occasionally by other pupils.

RULES FOR TEACHING CYCLES

The overarching rule of classroom verbal behavior that is indicated by investigation of teaching cycles by means of the Markov chain might be called "the classroom law of inertia." Any given state tends to influence the following state in a temporal sequence. Taking teaching cycles as states, this influence is in the form of increasing the probability that the following state will have the same characteristics as the preceding state. Thus, for all of the dimensions of teaching cycles that were studied -- initiator of the cycle, logic of the cycle, and cycle type -- teaching cycles once set in motion tend to remain in motion to a greater extent than would be indicated by the overall percentage distribution of cycle characteristics. The rules listed below are corollaries of this basic "law."

It should be noted that there are variations in the basic rules of the game. These variations are comparable to styles of play in games like basketball or bridge. For example, while all bridge players normally follow certain general rules, individual players or teams are free to follow different bidding conventions and styles of play. Similarly, teachers, as a general rule, initiate teaching cycles; that is, teachers rather than pupils take the initiate in getting verbal exchanges under way. This is true of all classes. When a pupil does initiate a cycle, however, this may signal a different style of play in certain classes where pupils tend to initiate subsequent cycles to a far greater extent than is ordinarily the case. In some classes, then, a pupil-initiated cycle acts as a cue for other pupils to initiate subsequent cycles to a much greater extent than the rules normally specify.

1. The teacher initiates approximately 85 per cent of the teaching cycles. However, when the preceding cycle is a teacher-initiated cycle, the chance that another teacher-initiated cycle will follow is about 90 per cent. The percentage of total teacher initiation of cycles varies from class to class, but teacher initiation of cycles remains relatively constant from one session to the next in the same class unless procedures such as debates and student reports are introduced.

2. The pupil initiates about 15 per cent of the teaching cycles. However, when the preceding cycle is a pupil-initiated cycle, the chance that another pupil-initiated cycle will follow is approximately 40 per cent. Classes differ in the extent to which pupil-initiated cycles follow pupil-initiated cycles, indicating that modified ground rules govern this as well as other aspects of the classroom game.

3. Teaching cycles of a given logical type tend to occur in clusters of two or more. An explaining cycle, for example, tends to follow another explaining cycle to a greater extent than would be indicated by the overall percentage distribution. The same holds for defining cycles, for fact stating cycles and for the other logical processes.

4. A teaching cycle constituting a particular pattern of pedagogical moves tends to be followed by the same pattern to a greater extent than is indicated by the overall distribution of cycle types. Thus a SOL RES REA cycle tends to increase the probability of a subsequent SOL RES REA, and a SOL RES tends to increase the probability of a subsequent SOL RES. The typical sequences of pedagogical moves which determine teaching cycle types, therefore, are subject to the same principle of inertia which influences other characteristics of teaching cycles.

5. Teachers generally follow a soliciting-responding interchange with a reacting move. The ratio of presence to absence of a reacting move following a teacher-initiated SOL RES cycle is approximately 2:1. However, the typical pupil-initiated teaching cycle is SOL RES rather than SOL RES REA. Pupils, then, generally refrain from commenting upon or evaluating the responses they elicit.

6. The pupil, more so than the teacher, initiates unusual teaching cycles such as those that involve reactions to structuring and soliciting moves.

FURTHER RESEARCH

That the rules cited above are the rules of the game as played in the classes studied is obvious from the data. One can only speculate why teachers and pupils so consistently follow these rules. Perhaps high school teachers like those represented in this study have found the "teacher soliciting - pupil responding - teacher reacting" pattern of instruction to be the most effective method of instruction. One might view this as a kind of pragmatic evolution, a process by which the most effective techniques have survived through years of usage. In a sense, this suggests a blind evolution, or at least nonrational development uninfluenced for the most part by rational foresight. On the other hand, this pattern of teaching may be based on teachers' assumptions about how high school pupils learn; that is, teachers may assume that if they lectured a great deal, which is more characteristic of classes at the college level, pupils would tend to become bored. Teachers may also assume that if much of the class time is devoted to pupil reacting, such a process might degenerate into a sharing of ignorance.

From another point of view, teachers may assume that students "learn by doing." Following Dewey's general point of view, their aim is, therefore, to stimulate and guide this "doing" by repeated solicitations. From this point of view, classroom discourse may be seen as a rehearsal of cognitive processes or, in short, an opportunity to practice thinking as viewed by these teachers. As Dewey has suggested, since thinking begins with a problem, one way for the teacher to encourage pupils to think is to pose a problem in the form of a question. Thus, the aim of teaching is to stimulate and shape the pupil's cognitive responses. The teacher stimulates and directs the response by posing a problem which initiates the pupil's thinking; that is, he asks a question that requires an answer. The teacher further modifies this response by his subsequent reactions.

Another possible explanation concerns the end point or payoff of the teaching game. In most instances, the payoff is the pupil's learning as measured by a test. If a pupil does well on the test, which presumably shows that he has learned, both the pupil and the teacher win the game. Similarly, if the pupil fails the test, which presumably shows that he has not learned, both the pupil and the teacher lose the game. If this is indeed the case, one might view the classroom discourse as preparation or rehearsal for the payoff test; thus, the teacher conducts the class in essentially the same form in which a test is presented in order to maximize transfer to the test situation. The discourse, therefore, might be viewed as a series of micro-tests in preparation for the final testing situation.

None of these speculations can be proposed with a high degree of confidence, and certainly the data do not warrant choosing one set of speculations over another. Perhaps all of the factors discussed influence the pattern of classroom discourse to some extent. In any event, the more important issue concerns continued investigation of the pedagogical pattern of interaction that has been identified in this research and careful evaluation of its effectiveness in terms of specific consequences.

Problems for Further Research

Several promising lines for further investigation have become apparent during the course of our research during the past three years:

1. One of the most important lines for continuing study concerns the reformulation of the antecedent-consequence nature of research in teaching to recognize the need for descriptive studies both of classroom variables and of outcome variables. Instead of investigating various dimensions of classroom behavior in relation to some arbitrary measure of "learning," it may be more useful in the long run to formulate investigations in terms of the general question, "If a given set of events occurs in the classroom, then what are the observable outcomes?" For this kind of research, the usual tests devised to measure "learning" will probably not be adequate. At the beginning, at least, one would want to explore as fully as possible a wide range of possible outcomes, perhaps using a variety of interview techniques to collect data from pupils and, on the basis of such information, gradually to develop more formalized instruments which in all likelihood will be considerably different from the kind of measure used in the present study. (See Appendix C of this report and The Language of the Classroom, Part One, pages 128-134.)

2. With appropriate modifications in the categories labeled "substantive meanings," the system of analysis devised in this research provides a potentially useful technique for investigation of classroom teaching in a variety of high school subjects such as English, social studies, mathematics, and science. The results of such studies together with the findings of the present research would provide a basis for comparing and contrasting the patterns of teaching in the four basic subjects traditionally included in the high school curriculum.

3. Although the present research was concerned with patterns of pedagogical discourse in the high school classroom, the question arises whether the method of analysis is also useful in studying teacher-student interaction in elementary schools and colleges. Further research might, therefore, extend the study of classroom teaching to include elementary and college classes to determine whether the general approach developed in this study is applicable to these other levels, and what adaptations in the method of analysis are necessary when applied to these levels of instruction.

Implications for Research Design

The design of this research was a compromise between rigorous experimental laboratory procedures and more informal techniques represented by typical case history methods. In retrospect, this seems to have been a fortunate compromise, in that the data clearly reflect the complex interactions of actual, ongoing classes; yet the research procedures permitted sufficient control to yield results that could be treated within practical limits and interpreted with reasonable confidence.

When one views classroom interaction from a research perspective, he is confronted with a complex maze of interrelated phenomena. Twenty or thirty people are continually interacting in a variety of multidetermined ways, each action dynamically influencing subsequent events. The entire process rapidly and constantly changes while the researcher tries to identify meaningful dimensions of observation. In part, it is probably this extraordinary complexity which has mitigated against research in classroom settings and has led scholars to view educational problems either from a more philosophical position relatively independent of controlled empirical investigations, or from the perspective of highly artificial laboratory conditions.

Certainly both points of view have much to offer in the search for knowledge about the teaching process. The present research clearly illustrates this premise. It began with the concept of language games developed in the philosophical work of Wittgenstein and others and relied heavily on analytic philosophers, such as Feigl, in devising the categories of meaning. Yet throughout the research, the interplay between theoretical concepts and empirical data was of utmost importance. While the initial theoretical concepts guided attempts to observe and describe the complex events of classroom interaction, the daily confrontation of these concepts with the primary data of actual classes led to revisions and refinements of earlier notions that would have been impossible without the constant check of the empirical material.

This study also borrowed from the tradition of laboratory research. Although it was not possible to achieve the kind of rigorous control often established in certain types of experimental investigations, the research procedures of this study offered at least a modicum of both statistical and experimental control of the data using techniques paralleling those of the laboratory. Without such controls, one could hardly deal meaningfully with the complex phenomena of the classroom. The complexity itself, however, suggests that the inevitable simplification of laboratory research precludes a realistically meaningful view of the teaching process. In the typical psychological learning experiment, for example, subjects are selected for the particular study on the basis of certain relevant criteria, but, in most instances, the interaction of the experimenter and subjects begins and ends with the experiment. In contrast, the teacher and pupils in each of the classrooms sampled in this research had a history of interaction together, and this research was only a short time sample in that history. Undoubtedly, the events observed in this time sample were inextricably related to events prior to the classes' participation in the research, and in a sense, the unique tradition of each class was part of the problem under investigation. If an "experimental" teacher had been introduced in each classroom; if the teaching unit had been completely independent of the course of study; if the research had been conducted in laboratory rooms specially designed to increase sound fidelity of the recordings, certain experimental advantages would have been gained. But the study would not have been a study of actual classroom interaction.

The research procedures, without doubt, influenced the behavior of teachers and pupils; probably few people are totally unaffected by the presence of apparatus that is recording every word spoken. But efforts were made in the direction of minimizing such distractions. Observations made during the study suggest that, by and large, this aim was accomplished with a fair degree of success.

To some degree, the procedures used by different researchers to investigate the same general problem are a matter of personal taste or professional style. Indeed, at the current stage of knowledge about the teaching process, a variety of widely different approaches to the same problem is probably desirable. Nevertheless, experience in this study would suggest that studies within actual classroom settings, with some degree of control, is an especially useful mode of investigation in the study of classroom teaching.

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APPENDIX A

CONTENT ANALYSIS SYSTEM

(Basic System for Analysis Developed During First Phase of the Research)

The system consists of three parts: Part One presents the basic categories of analysis; Part Two defines the pedagogical moves and teaching cycles; and Part Three is concerned with the categories of meaning communicated in the classroom.

Part One: Basic Categories of Analysis

Basic categories of analysis include types of pedagogical moves, teaching cycles, and various categories of meaning. This section presents a general overview of these basic categories.

Pedagogical Moves. Following the theoretical framework proposed by Wittgenstein (17), classroom discourse is viewed as a kind of "language game." The basic unit of discourse is defined as a pedagogical move. These moves are classified in four major categories according to the pedagogical functions they serve in classroom discussion: structuring, soliciting, responding and reacting. These four types of moves describe the verbal maneuvers of both teachers and students in classroom discourse and set the framework for the analysis of meanings communicated in the classroom. (See Part Two below.)

Teaching Cycles. Pedagogical moves occur in classroom discourse in certain cyclical patterns and combinations that are designated teaching cycles. (See Part Two below.)

Categories of Meanings. Four functionally different types of meanings are communicated by teachers and pupils in the classroom: (1) substantive meanings with associated (2) substantive-logical meanings; and (3) instructional meanings with associated (4) instructional-logical meanings. Within each pedagogical move these four types of meanings are identified when they appear in the discourse and are coded according to the rules of analysis.

Coding Format. The four types of pedagogical moves are the basic units for analyzing the discourse both of teachers and of pupils. One or more pedagogical moves may occur within an utterance, which is defined as an uninterrupted statement by a teacher or pupil.

Within each pedagogical move, the four types of meanings (substantive with associated substantive-logical meanings; and instructional with associated instructional-logical meanings) are identified and coded when they occur in the discourse. Coding is from the viewpoint of the observer with pedagogical meaning inferred from the speaker's verbal behavior. Coders listen to tape recordings of class sessions as well as follow the transcribed protocols.

Each pedagogical move is coded as follows:

(1) / (2) / (3) / (4) / (5) / (6) / (7) / (8)

(1) Speaker (Teacher, Pupil, or Audio-Visual Device)
(2) Type of Pedagogical Move
(3) Substantive Meanings
(4) Substantive-Logical Meanings
(5) Number of Lines in (3) and (4)
(6) Instructional Meanings
(7) Instructional-Logical Meanings
(8) Number of lines in (6) and (7)

An example of a coded pedagogical move is:

T/ STR / IMX / XPL / 4 / PRC / FAC / 2

This is interpreted as follows: a teacher makes a structuring move in which something about imports and exports is explained for four lines of transcript and also states facts about class procedures for two lines of transcript.

Part Two: Pedagogical Moves and Teaching Cycles

1. Pedagogical Moves. Pedagogical moves, the basic units of classroom discourse, describe the verbal activities of teachers and pupils in the classroom. There are four basic types of moves which characterize the verbal interplay of teachers and pupils: structuring and soliciting, which are initiatory moves; and responding and reacting, which are reflexive moves.

1.1. Structuring (STR)

Structuring moves serve the function of setting the context for subsequent behavior by (1) launching or halting-excluding interaction between pupils and teachers, and (2) indicating the nature of the interaction in terms of the dimensions of time, agent, activity, topic and cognitive process, regulations, reasons, and instructional aids. Structuring moves may set the context for the entire classroom game and/or for one or more sub-games. As initiatory maneuvers, structuring moves are not called out by anything in the immediate classroom situation except the speaker's concept of what should be said or taught.

Examples

T/STR: Last night I was sitting out on the porch trying to cool off and also trying to ask myself how to best begin this unit on international economics, international trade, world trade, or whatever else one wants to call it. And after thinking over a number of approaches, I wrote down on paper a number of items that are connected with our story. Some of them are within your experience. Some of them are found in your pamphlet.

T/STR: All right, getting down to it now, I think international trade, then, or international economic relations, whatever you want to call it, is a field of study within economics which in many cases has been unfortunately divorced from or too far divorced from domestic trade because there are great similarities, and also there are some rather distinct differences.

The postscript -A is adding to a structuring move (STR-A) when the move is a result of an assignment, such as student reports or debates. The postscript "A" serves to distinguish these moves from those structuring moves that have not been previously assigned.

Example

P/STR-A: Well, I was asking my father on, well, he imports watches -- that's his business. I wasn't able to interview him, but there was one thing I found out from - you know - when he just started importing. When you import watches from Switzerland, you have to have a code of letters you get from the Swiss government so that you can be shown that these watches aren't smuggled, and I thought this was a very interesting thing, and that way the American buyer can check also as they're brought over, these are not smuggled watches, or that, that they're not fake watches.

1.2. Soliciting (SOL)

Moves in this category are intended to elicit (a) an active verbal response on the part of the persons addressed; (b) a cognitive response, e.g., encouraging persons addressed to attend to something; or (c) a physical response.

Soliciting moves are clearly directive in intent and function and are crucial in any active classroom interchange between teachers and pupils. Although these moves may take all grammatical forms -- declarative, interrogative, and imperative -- the interrogative occurs most frequently. In coding soliciting moves, the various categories of analysis are coded in terms of the response expected rather than the solicitation itself.*

Examples

T/SOL: What are the factors of production?

P/SOL: May we keep our books open?

T/SOL: Turn the lights out, Bobby!

T/SOL: Pay attention to this!

1.3. Responding (RES)

Responding moves bear a reciprocal relationship to soliciting moves and occur only in relation to them. Their pedagogical function is to fulfill the expectation of soliciting moves and are, therefore, reflexive in nature. Since solicitations and responses are defined in terms of each other, there can be no solicitation that is not intended to elicit a response, and no response that has not been directly elicited by a solicitation.

Examples

T/SOL: What are the factors of production?
P/RES : Land, labor, and capital.

T/SOL: Why didn't you do the assignment?
P/RES : I was absent yesterday.

T/SOL: What is exchange control?
P/RES : I don't know.

1.4 Reacting (REA)

These moves are occasioned by a structuring, soliciting, responding, or another reacting move, but are not directly elicited by them. Their pedagogical function is to rate (positively or negatively) and/or to modify (by clarifying, synthesizing or expanding) what was said in the move(s) that occasioned them.

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* This procedure is adapted from Smith and Meux (13).

Reacting moves differ from responding moves, in that while a responding move is always directly elicited by a solicitation, preceding moves serve only as the occasion for reactions. For example, rating by a teacher of a student's response is designated a reacting move; that is, the student's response is the occasion for the teacher's evaluative reaction, but it does not actively elicit it.

Examples

T/REA: All right.

T/REA: That's partly it.

P/REA: But he left out the most important part.

T/REA: Good. It limits specifically the number of items of one type or another which can come into this country. For example, we might decide that no more than one thousand of German automobiles will be imported in any one calendar year. This is a specific quota which the government checks.

When the coding symbol for a reacting move is underlined (REA), it indicates that the reaction is to more than a single move.

Examples

T/REA: Now Kathy has mentioned natural resources and you raise the problem of human skills. Both are factors of production.

T/REA: All of the instances of foreign investment that we have discussed here can be classified as either direct or portfolio types of investment.

2. Teaching Cycles. Pedagogical moves occur in classroom discourse in certain cyclical patterns and combinations, which are designated teaching cycles. A teaching cycle begins either with a structuring move or with a solicitation which is not preceded by a structuring move. A cycle ends with the move that precedes a new cycle. Teaching cycles are coded only after all pedagogical moves within a protocol have been coded. By defining structuring and soliciting moves as initiatory, and responding and reacting moves as reflexive moves, twenty-one types of teaching cycles are possible. The first twelve are structure-initiated; the next nine are initiated by soliciting moves.

1. STR
2. STR SOL
3. STR REA
4. STR REA REA...
5. STR SOL RES
6. STR SOL RES RES...
7. STR SOL REA
8. STR SOL REA REA...
9. STR SOL RES REA
10. STR SOL RES REA REA...
11. STR SOL RES REA RES...
12. STR SOL RES REA RES... REA...
13. SOL
14. SOL RES
15. SOL RES RES...
16. SOL REA
17. SOL REA REA...
18. SOL RES REA
19. SOL RES REA REA...
20. SOL RES REA RES...
21. SOL RES REA RES...REA...

Legend

STR - Structuring
SOL - Soliciting
RES - Responding
REA - Reacting
... - one or more additional moves of the kind designated. For example, RES... means one or more additional responses to the same solicitation.

Each of the twenty-one cycles represents a different pattern of pedagogical moves. Cycle 9, for example, represents a pattern of discourse which is initiated by a structuring move and is followed by a solicitation; this solicitation elicits a response which is the occasion for a reaction. Cycle 21 is initiated by a solicitation which elicits multiple responses which in turn are the occasion for multiple reactions.

Teaching cycles provide a way of describing pedagogical moves in relationship to each other. Using teaching cycles it is possible, for example, to determine the extent to which solicitations elicit single or multiple responses or the regularity with which reactions follow responses. If a single pedagogical move may be compared to a move in chess or a single play in football, then the teaching cycle may be seen as an interrelated series of moves or plays. The focus in teaching cycles is on combinations of pedagogical moves and sequences of linguistic events in the classroom.

Part Three: Categories of Meanings

Four functionally different types of meanings are communicated by teachers and students in the classroom: substantive with associated substantive-logical meanings; and instructional with associated instructional-logical meanings. Within each pedagogical move these four types of meanings are identified when they appear in the discourse.

I. Substantive Meanings. Substantive meanings refer to the subject matter under study by the class. In the present research, the categories of substantive meaning relate to the topic of "International Trade." The categories listed below were developed by means of a content analysis of the pamphlet on which this teaching unit was based: International Economic Problems by James D. Calderwood.

1.1. Trade (TRA)

General discussion of trade; nature of trade in broad terms; definition of trade; why trade takes place.

1.11 Trade--Domestic and International (TDI)

Domestic trade compared and contrasted with international trade; discussion of consequences or differences between international and domestic trade when these differences are the focus of discussion.

1.12 Trade--Money and Banking (TMB)

Money and banking related to trade (not primarily aid); rate of exchange; balance of payments.

1.13 Trade--Who Trades With Whom (TWH)

Who (countries or individual corporations) trades with whom; discussion of multilateral trade.

1.2. Factors of Production and/or Specialization (FSP)

General discussion of factors of production; what the factors are; specialization; absolute and comparative advantage.

1.21 Factor of Production--Natural Resources (FNR)

Specific discussion of natural resources as a factor of production.

1.22 Factor of Production--Human Skills (FHS)

Specific discussion of labor as a factor of production.

1.23 Factor of Production--Capital Equipment (FCE)

Specific discussion of capital equipment as a factor of production.

1.24 Factors Other Than Natural Resources, Human Skills, and Capital Equipment Occurring in Discussion of Reasons for Trade (FRE)

Any discussion of reasons for trade or factors in addition to those specifically identified above (e.g., political reasons for trade).

1.3. Imports and/or Exports (IMX)

What is imported and/or exported from any country; dependence on imports and/or exports; effects of imports and/or exports on economy; balance of trade.

1.4. Foreign Investment--General (FOR)

1.41 Foreign Investment--Direct (FOD)

Specific discussion of direct foreign investment.

1.42 Foreign Investment--Portfolio (FOP)

Specific discussion of portfolio investment.

1.5. Barriers to Trade (BAR)

General discussion of barriers including policies directed toward maintaining or increasing barriers; how barriers work; effects of barriers.

1.51 Barrier--Tariffs (BAT)

Specific discussion of tariffs.

1.52 Barrier--Quotas (BAQ)

Specific discussion of quotas.

1.53 Barrier--Exchange Control (BAE)

Specific discussion of exchange control.

1.54 Barrier--Export Control (BAX)

Specific discussion of export control.

1.55 Barrier--Administrative Protectionism (BAA)

Specific discussion of administrative protectionism or red tape as a barrier to trade.

1.6. Promoting Free Trade (PFT)

Means of promoting free trade or reducing trade barriers; policies related to free trade; Common Market; Reciprocal Trade Agreements.

1.7. Relevant to Trade (REL)

Discussion relevant to trade or economics but not in the unit; (e.g., foreign aid).

1.8. Not Trade (NTR)

Discussion not about trade or economics and not related to either.

2. Substantive-Logical Meanings. Substantive-logical meanings refer to the cognitive processes involved in dealing with the subject matter under study. Substantive-logical meanings are categorized under three general headings: (a) Analytic Process; (b) Empirical Process; and (c) Evaluative Process.

2.1. Analytic Process. Analytic statements are statements about the proposed use of language. Analytic statements are true by virtue of the meaning of the words of which they are composed. They depend for their truth on an agreed upon set of rules, and follow logically from accepted definitions. The statement "Mother is a female parent," for example, is necessarily true because "mother" means the same as "female parent." To define a term is to indicate what the term means, to state how it is used, or to give a verbal equivalent. A definition can be expressed in two ways: (1) by talking about the characteristics designated by a term; or (2) by talking about specific instances of the class designated by a term. Interpreting bears the same relationship to statements that defining does to terms.

2.11 Defining--General (DEF)

To define in a general manner is to give the defining characteristics of a class and to give a specific example of an item within the class. DEF is also coded when the type of definition asked for or given is not clear.

Example	Code*
T: What is a barrier?	T/SOL/BAR/DEF/1/-/-/-
P: It's something that hinders trade, like a tariff.	P/RES/BAR/DEF/2/-/-/-

2.111 Defining--Denotative (DED)

To define denotatively is to refer to the objects (abstract or concrete) to which the term is applicable. A denotative definition cites the objects to which the term may correctly be applied, and these objects constitute the denotation of the term. Thus, to give actual instances or examples of international trade (U.S. trading with Britain, Germany trading with France) is to give a denotative definition of the term "international trade."

Examples	Code
T: What are public utilities?	T/SOL/NTR/DEF/1/-/-/-
P: Light, power, gas, water.	P/RES/NTR/DED/1/-/-/-
T: Can you give an example of a machine tool, Alex?	T/SOL/FSP/DED/2/-/-/-
P: A press.	P/RES/FSP/DED/1/-/-/-

2.112 Defining--Connotative (DEC)

To define connotatively is to give the set of properties or characteristics that an object (abstract or concrete) must have for the term to be applicable. DEC thus refers to the defining characteristics of a given term.

Examples	Code
T: Now what do we mean by quotas?	T/SOL/BAQ/DEF/1/-/-/-
P: The government sets a special amount of things that can come into the country in one year, and no more can come in.	P/RES/BAQ/DEC/4/-/-/-
T: What are machine tools?	T/SOL/FSP/DEF/1/-/-/-
P: Tools that make tools.	P/RES/FSP/DEC/1/-/-/-

---

* Underlined symbols indicate specific part of code being illustrated. Line counts refer to lines of typescript in example, not to lines in actual protocols.

2.12 Interpreting (INT)

To interpret a statement is to give its verbal equivalent, usually for the purpose of rendering its meaning clear.

Examples	Code
T: What does President Kennedy mean when he says, "We must trade or fade?"	T/SOL/TRA/INT/2/-/-/-
T: What does the slogan mean, "Buy American -- the job you save may be your own?"	T/SOL/BAR/INT/3/-/-/-

2.2. Empirical Process. Empirical statements give information about the world, based on one's experience of it. The distinguishing mark of empirical statements is that they are verified by tests conducted in terms of one's experience. In other words, one makes observations and decides whether the statement is true or false.

2.21 Fact Stating (FAC)

Fact stating is giving an account, description, or report of an event or state of affairs. To state a fact is to state what is, what was in the past, or what will be in the future. For example, a statement of a past event is, "Yesterday we reviewed some of the terms used by economists in talking about international trade." A statement of a present state of affairs is, "We are studying the problems relating to international trade." A statement referring to future events is, "We will discuss international monetary policies tomorrow."

The facts stated or reported need not be singular to be coded as FAC. Generalizations or universal statements are also coded FAC. For example, such general statements as, "No country is self supporting" or "All people need food" are coded FAC.

Examples	Code
T: Now in 1934... in 1934... who was President?	T/SOL/PFT/FAC/2/-/-/-
P: Roosevelt.	P/RES/PFT/FAC/1/-/-/-
T: The United States will say that the French franc is exchanged at how many per dollar?	T/SOL/TMB/FAC/3/-/-/-
P: Five.	P/RES/TMB/FAC/1/-/-/-

2 22 Explaining (XPL)

To explain is to relate an object, event, action or state of affairs to some other object, event, action or state of affairs; or to show the relation between an event or state of affairs and a principle or generalization; or to state the relationships between principles or generalizations.

Following Copi (5:420), explaining and inferring are regarded as the same process:

> An explanation is a group of statements or a story from which the thing to be explained can logically be inferred and whose assumption removes or diminishes its problematic or puzzling character. . . . It thus appears that explanation and inference are very closely related. They are, in fact, the same process regarded from opposite points of view. Given certain premises, any conclusion which can logically be inferred from them is regarded as being explained by them. And given a fact to be explained, we say that we have found an explanation for it when we have found a set of premises from which it can be logically inferred.

A statement is coded XPL when it concerns the effect of some event or state of affairs or some other event or state of affairs; or when the statement gives the reasons for an event or state of affairs (i.e., relates an event to some general principle) The relationship between two events, facts, or states of affairs is often expressed in terms of "If..., then ..."

One way of showing relationships is by comparing and contrasting. Therefore, all explicit instances of comparing and contrasting are coded XPL.

Explanations frequently are given in response to questions asking why or how some events occur. The "why" or "how" may be explicit (i.e., in a preceding question) or implicit in the context of the statement. Also, the word "because" is frequently a verbal cue indicating the explanatory nature of the statement.

Examples	Code
T: Why do industrialized countries trade the most?	T/SOL/TWH/XPL/1/-/-/-
P: Because they have more...more to offer each other	P/RES/TWH/XPL/2/-/-/-

Examples	Code
T: What would happen if we raised the tariff on transistor radios?	T/SOL/BAT/XPL/2/-/-/-
P: Prices would go up.	P/RES/BAT/XPL/1/-/-/-
P: Japan would raise its tariffs on American stuff.	P/RES-M2/BAT/XPL/2/-/-/-

2.3. Evaluative Process. Evaluative statements are statements that grade, praise, blame, commend or criticize something. Evaluative statements are verified by reference to a set of criteria or principles of judgment. A common set of criteria is essential if individuals are to reach agreement regarding the value of a given act, object or state of affairs.

2.31 Opining (OPN)

To opine is to make statements in which the speaker gives his own valuation regarding (a) what should or ought to be done, or (b) fairness, worth, importance, quality of an action, event, person, idea, plan or policy.

Examples	Code
P: I think the farmer is being exploited.	P/REA/BAT/OPN/1/-/-/-
T: Do you feel that a company who has gone into another country, has invested time, has invested money, has invested its knowledge, its skill and so on, has a right to make a profit?	T/SOL/FOD/OPN/6/-/-/-
P: Yes.	P/RES/FOD/OPN/1/-/-/-

2.32 Justifying (JUS)

To justify is to give reasons for holding an opinion regarding (a) what should or ought to be done, or (b) fairness, worth, importance, quality of an action, event, policy, idea, plan or thing.

Justifying statements are intended as support or criticism of opinions that have either been explicit in a previous statement or are implied within the context of the interaction. Justifying statements are frequently preceded by an opining statement, although this is not a necessary condition for coding JUS.

Examples	Code
P: I feel that the reason why the United States should not and probably will not in a number of years, join the Common Market, is that because the Latin countries with which we are associated would feel that we are no longer interested in their opinion.	P/STR-A/PFT/JUS/8/-/-/-
T: Is it the government's responsibility then to train you for some other job, assuming that you couldn't get a job on your own?	T/SOL/PFT/OPN/4/-/-/-
P: I believe that they should train them over again and give them government jobs or something because, I mean, after all if it weren't for the tariff and barriers, they'd still be in work.	P/RES/PFT/JUS/6/-/-/-

2.4. Logical Process Not Clear (NCL)

NCL is coded when the wording or sense of a statement is ambiguous and the substantive-logical meaning cannot be determined.

3. Instructional Meanings. In addition to talking about a particular area of study, teachers and pupils also discuss matters pertaining to classroom management, assignments and procedures that are part of the instructional process. The items listed under instructional meanings categorize the content of this aspect of classroom discourse.

3.1. Assignment (ASG)

Discussion of reports, homework, debates, tests, readings, and the like.

Examples	Code
P: What should we do for tomorrow?	P/SOL/TRA/-/-/ASG/FAC/1
T: For tomorrow, I'd like you to read Chapters One and Two in this booklet.	T/RES/TRA/-/-/ASG/FAC/2

3.2. Material (MAT)

Discussion of textbooks, maps, chalkboard, teaching aids, films, newspapers, television programs, radio, and the like.

Examples	Code
T: Now, look at this graph.	T/SOL/IMX/-/-/MAT/PRF/1
P: I think this book is too easy.	P/REA/TRA/-/-/MAT/OPN/1

3.3. Person (PER)

Discussion of teacher's or pupil's person, physiognomy, dress, expression, or appearance. Used also when a personal experience is the topic under discussion.

Examples	Code
T: That's a pretty dress.	T/REA/-/-/-/PER/OPN/1
T: Have you ever been to Canada?	T/SOL/TMB/-/-/PER/FAC/1

3.4. Procedure (PRC)

Discussion of any course of action or set of activities, continuing activity, or future activity. Includes references to how class is to be conducted and what regulations are to be observed. Refers also to specific instances of class regulations or practice.

Examples	Code
T: Tomorrow we are going to discuss foreign investments.	T/STR/FOR/-/-/PRC/FAC/2
T: There will be no talking when I'm talking.	T/SOL/IMX/-/-/PRC/PRF/2
T: I think I've asked you to keep quiet.	T/SOL/TDI/-/-/PRC/PRF/1

3.5. Statement (STA)

Reference to any verbal utterance, particularly the meaning, validity, truth, or propriety of that utterance. May refer to a single word, sentence, paragraph or longer statement.

Examples	Code
T: That's correct.	T/REA/IMX/-/-/STA/POS/1
P: I think you're wrong.	P/REA/PFT/-/-/STA/NEG/1

3.6. Logical Process (LOG)

Discussion of the way language is used or of a logical process. Includes references to definitions, explanations, reasoning, arguments, and the like.

Examples	Code
T: What is a definition?	T/SOL/TRA/-/-/LOG/DEF/1
T: That's a negative argument.	T/REA/TRA/-/-/LOG/FAC/1

3.7. Action--General (ACT)

Reference to performance, action, or event where the nature of the performance (whether vocal, non-vocal, cognitive, or emotional) cannot be determined or when more than one of the subcategories listed below are involved.

Examples	Code
T: Stop that!	T/SOL/FOR/-/-/ACT/PRF/1
T: Think about that for a few minutes and then write your answers.	T/SOL/TRA/-/-/ACT/PRF/2

3.71 Action--Vocal (ACV)

Reference to action involving the emission of speech or sound. Used for the physical qualities of the action or the act of saying something. This includes references to reading aloud, pace, volume, pitch, and diction.

Examples	Code
T: Bobby, you said that before.	T/REA/TWH/-/-/ACV/FAC/1
T: Repeat that, please.	T/SOL/IMX/-/-/ACV/RPT/1

3.72 Action--Physical (ACP)

Reference to action where physical movements are primary. Includes writing, passing papers, walking, hearing and seeing.

Examples	Code
T: Turn out the lights, please.	T/SOL/PFT/-/-/ACP/PRF/I
P: May I leave the room?	P/SOL/BAT/-/-/ACP/AON/I

3.73 Action--Cognitive (ACC)

Reference to action where a cognitive process is principally involved. This includes thinking, imagining, knowing, supposing, understanding or not understanding, listening, believing, and reading (silent).

Examples	Code
P: I don't know.	P/RES/FCE/-/-/ACC/FAC/I
T: Now keep this in mind.	T/SOL/BAQ/-/-/ACC/PRF/I

3.74 Action--Emotional (ACE)

Reference to action where feelings or emotions are principally involved. Includes feeling bad, good, sorry, thankful, grateful, relieved, or upset.

Examples	Code
P: Thanks a lot.	P/REA/FHS/-/-/ACE/FAC/I
T: Keep your feelings out of this.	T/SOL/BAR/-/-/ACE/PRF/I

3.8. Language Mechanics (LAM)

Discussion of language usage or grammar.

Examples	Code
T: "I seen" or "I saw?"	T/SOL/TMB/-/-/LAM/FAC/I
P: How do you spell, "reciprocal?"	P/SOL/PFT/-/-/LAM/FAC/I
T: R-E-C-I-P-R-O-C-A-L.	T/RES/PFT/-/-/LAM/FAC/I

4. Instructional-Logical Meanings. While instructional-logical meanings include those processes listed under substantive-logical meanings, they also refer to distinctly didactic verbal moves such as those involved in positive and negative evaluating and giving instructions. For this reason, additional subcategories under the logical processes are necessary.

4.1. Analytic Process. (Same as in substantive-logical meanings)

4.11 Defining General (DEF)

4.111 Defining Denotative (DED)

4.112 Defining Connotative (DEC)

4.12 Interpreting (INT)

4.2. Empirical Process. (Same as in substantive-logical meanings)

4.21 Fact Stating (FAC)

4.22 Explaining (XPL)

4.3. Evaluative Process. (Same as in substantive-logical meanings)

4.31 Opining (OPN)

4.32 Justifying (JUS)

4.33 Rating

The categories under rating include judgments about the truth or falsity, or appropriateness or inappropriateness of preceding statements.

4.331 Positive (POS)

Distinctly affirmative rating, usually in a reaction to a statement.

Examples	Code
T: Right.	T/REA/TDI/-/-/STA/POS/I
T: Yeah.	T/REA/FSP/-/-/STA/POS/I
T: Good.	T/REA/FOD/-/-/STA/POS/I

4.332 Admitting (ADM)

Mildly accepting or equivocally positive rating, usually in a reaction to a statement.

Examples	Code
T: Mm-hmm	T/REA/PFT/-/-/STA/ADM/I
T: All right.	T/REA/FOR/-/-/STA/ADM/I
T: O.K.	T/REA/BAR/-/-/STA/ADM/I

4.333 Repeating (RPT)

Implicit rating in reaction in which there is only a repetition, rephrasing, or restatement of the occasioning move with no explicit evaluative comment. Also coded for solicitations and responses which ask for or give a repetition of a previous statement.

Examples	Code
T: What countries belong to the Common Market?	T/SOL/PFT/FAC/2/-/-/-/
P: France.	P/RES/PFT/FAC/1/-/-/-/
T: France.	T/REA/PFT/FAC/-/-/STA/RPT/I
T: What?	T/SOL/IMX/-/-/ACV/RPT/I
P: Tin (a repetition).	P/RES/IMX/-/-/ACV/RPT/I

4.334 Qualifying (Qal)

Any indication of reservation, however mild or oblique, usually in reactions to statements.

Examples	Code
T: That's partly it	T/REA/FSP/-/-/STA/QAL/I
T: That's one way of looking at it.	T/REA/BAR/-/-/STA/QAL/I
P: Yes, but....	P/REA/PFT/-/-/STA/QAL/I

4.335 Not Admitting (NAD)

Ratings which reject by stating the contrary rather than by making an explicitly negative comment.

Examples	Code
T: Imports and exports are not the factors of production.	T/REA/RSP/-/-/STA/NAD/2
T: We do trade with Yugoslavia.	T/REA/TWH/-/-/STA/NAD/1

4.336 Negative (NEG)

Distinctly negative rating, usually in reaction to a statement.

Examples	Code
T: No.	T/REA/FOP/-/-/STA/NEG/1
T: You're wrong.	T/REA/BAE/-/-/STA/NEG/1
T: Uh-uh.	T/REA/TWH/-/-/STA/NEG/1

4.337 Positive or Negative (PON)

Solicitations in which a request is made either for a positive or a negative rating.

Examples	Code
T: Right?	T/SOL/IMX/-/-/STA/PON/1
P: Am I wrong?	P/SOL/BAT/-/-/STA/PON/1

4.338 Admitting or Not Admitting (AON)

Solicitations in which a request is made to give a rating or to permit a given procedure or action.

Examples	Code
P: Is my homework O.K.?	P/SOL/TRA/-/-/ASG/AON/1
P: Is this all right?	P/SOL/PFT/-/-/PRC/AON/1

4.4. Extralogical Process. The two categories listed under extralogical process involve solicitations which call for the performance of a physical or cognitive act or solicitations which invite responses that are nonpropositional verbal utterances (e.g., commands, questions, or directives).

4.41 Performing (PRF)

Solicitations which ask or demand of someone to do something. These include directives and imperatives.

Examples	Code
T: Read chapters one and two.	T/SOL/TRA/-/-/ASG/PRF/I
T: John?	T/SOL/REL/-/-/ACV/PRF/I
T: Pay attention now!	T/SOL/TDI/-/-/ACC/PRF/I

4.42 Directing (DIR)

Solicitations which ask for a directive (a further solicitation). The solicitation must be general or involve more than one alternative rather than ask for approval or prohibition (AON) of a single, given procedure or action.

Examples	Code
T: How shall we handle this problem?	T/SOL/TRA/-/-/PRC/DIR/I
T: What ought we to do today?	T/SOL/TRA/-/-/PRC/DIR/I

CODING THE PROTOCOLS

In this section several excerpts from the coded protocols are given to illustrate coding procedures and interpretations of the coded information.

EXAMPLE NO. 1

EXCERPT FROM PROTOCOL

Teacher (Move #1): Now, in order to pacify, or help satisfy, certain groups in American industry and American politics who want high protective tariffs, or who are clamoring for protection, we have inserted into our reciprocal agreements two--what you might call--safeguards which are coming up now as President Kennedy looks for greater authority in the tariff business. (Move #2) What have we inserted in here to give an element of protection or to stifle the outcries of American businessmen who want protection? Two clauses which we call...? Yes?

Pupil (Move #3): The peril point and the escape clause.

Teacher (Move #4): Right. The peril point and the escape clause.

CODE

Move # 1	T/STR/BAT/XPL/7/-/-/-
Move # 2	T/SOL/BAT/FAC/3/-/-/-
Move # 3	P/RES/BAT/FAC/1/-/-/-
Move # 4	T/REA/BAT/-/-/STA/POS/1

INTERPRETATION

The teacher focuses on a substantive area by explaining something having to do with tariffs to the extent of seven lines (Move #1). He then solicits for three lines with the expectation that a factual response on tariffs will be given (Move #2). A pupil gives a one-line response by stating a fact about tariffs (Move #3). The teacher positively evaluates the statement by the pupil (Move #4).

The entire segment of discourse is an example of a teacher-initiated cycle 9 (STR SOL RES REA).

EXAMPLE NO. 2

EXCERPT FROM PROTOCOL

Teacher (Move #1): We specialize in what -- manufacturing or agriculture?

Pupil (Move #2): Manufacturing.

Teacher (Move #3): All right. We're able to support our people on a very small number of agricultural workers because we can specialize and make the trade with many places.

CODE

Move # 1	T/SOL/FSP/FAC/1/-/-/-
Move # 2	P/RES/FSP/FAC/1/-/-/-
Move # 3	T/REA/FSP/XPL/2/STA/ADM/1

INTERPRETATION

The teacher asks for factual information relating to factors of production or specialization. (Move #1). A pupil gives a one-line factual response (Move #2). The teacher reacts by admitting the previous statement and adding two lines of explanation on the same subject (Move #3).

The entire segment of discourse is an example of a teacher-initiated cycle 18 (SOL RES REA).

EXAMPLE NO. 3

EXCERPT FROM PROTOCOL

Teacher (Move # 1): For instance, what were your 1934 Reciprocal Trade Agreements? How did they work? What were they designed to do? Ellen?

Pupil (Move # 2): I don't know.

Teacher (Move # 3): We studied that just last week when we were studying the New Deal. (Move # 4) All right, Ron?

Pupil (Move # 5): Well, we agreed, I think we agreed to lower the tariffs for import duty in our country. Then the other country would reciprocate by agreeing to lower theirs.

Teacher (Move # 6): Very good.

CODE

Move # 1	T/SOL/PFT/XPL/3/-/-/-
Move # 2	P/RES/PFT/-/-/ACC/FAC/1
Move # 3	T/REA/PFT/-/-/PRC/FAC/1
Move # 4	T/SOL/PFT/-/-/ACV/PRF/1
Move # 5	P/RES-M4/PFT/XPL/3/-/-/-
Move # 6	T/REA/PFT/-/-/STA/POS/1

INTERPRETATION

The teacher asks for an explanation concerning the promotion of free trade (Move # 1). A pupil responds by making a one-line statement about her cognition (Move # 2). The teacher reacts to the statement by stating factual information about a class procedure to the extent of one line (Move # 3). He then calls upon a student to perform a vocal action (Move # 4). A pupil responds to a solicitation that occurred four moves earlier by giving a three-line explanation relating to promoting free trade (Move # 5). The teacher reacts by making a positive evaluation of the previous move (Move # 6).

The entire segment of discourse is an example of a teacher-initiated cycle 21 (SOL RES REA RES... REA...).

APPENDIX B

CODING INSTRUCTIONS:

SOLICITING MOVE COMPONENTS

I. Indicative Meaning

1.1 If a group of words serves only to indicate the agent addressed, while another group of words serves as the directive, do not consider the indication of the agent as a separate component of the solicitation.

Example

T/SOL: Why do the more advanced nations tend to be the major traders? John, see what you can do with this. (Indication of agent)

1.2 If the solicitor calls for the performance of an instructional task and the performance requires a series of actions of such a nature that only the completion of the series of actions fulfills the expectation of the solicitation, consider the series as one activity and the solicitation as containing only one component.

Example

T/SOL: Take out your assignment book and write down the assignment that is on the side board. (One task)

1.3 If the logical process activity called for is defining or interpreting, do not code "terms cited" unless the terms to be used in presenting the definition or interpretation are given in addition to the words to be defined or interpreted. The definiendum cannot be the "terms cited."

1.4 If a move contains only one component, there cannot be a shift in agents. If there are two indications of agent, code the last indication given by the speaker.

1.5 If the disjunctive "or" is contained in the solicitation but parallel alternatives are not presented to the agent for a choice, then the information operation cannot be "select." The construction of "or what" or "or something" is not considered as a parallel alternative.

1.6 If the propositional function construction is "what X," but the word in the position of "X" is "things," "items" or "fact," then the propositional function is equivalent to "what." In these cases, the "X" substitutes are considered equivalent to "what" and not qualifications of the word "what."

Examples

T/SOL: What things do we import? (What things = what)

T/SOL: What raw products do we import? (What X = which)

1.7 If the solicitation restates information presented by another speaker in order to summarize or clarify what has been presented and also to elicit further information, then code C/A for the information operation and declararive for the mode of presentation.

Example

T/SOL: You think then that we ought to go to war?
P/RES: Yes, because we have to protect our property.

1.8 If the solicitation calls for a voting procedure or the indication of a preference by all students of the class, then the information operation is A (provide a truth function) and the agent is "all pupils." DO NOT code a propositional function if the words "how many" or "who" are used, since the information can only be provided after each individual indicates a preference. The preference is solicited, not the tally of the votes.

Examples

T/SOL: How many of you favor tariffs?

T/SOL: Who thinks that we ought to join the Common Market?

1.9 If the solicitation calls for the repetition or the performance of a vocal act with unspecified logical process activity, the mode of presentation is imperative and the information operation is construct (C).

I.10 If the solicitation contains both a substantive and an instructional task, both tasks must be coded.

I.11 If the solicitation is introduced by a propositional function "how about" and the solicitor continues to indicate the primary activities expected, code amplification and code the more specific propositional function if another is indicated.

Example

T/SOL: How about Red China? Why don't we trade with them? (Through amplification, the propositional function becomes "Why.")

I.12 If the solicitation is presented as a polite request to which the response "yes" or "no" is not appropriate, code the mode of presentation imperative and the information operation as construct.

Examples

T/SOL: I want you to pass in your books now.

T/SOL: I would like for you to stop talking.

I.13 If there are two indications of the expected activities and both indications call for the same logical process activity and the same information operation, but the second indication bears a relation to the first such that second is less specific than, elliptical for, a shorter presentation of or a substitute for the first indication, then code the composition as single repeat information and designate the type called for.

I.14 If there are two indications of the response expected and both require the same logical process activity, and if the performance of one information operation is such that it constitutes the performance of the other information operation (i.e., terms in one indication redefine, clarify, qualify, or amplify the terms necessary for the other information operation), code the information operation as single-amplify and designate the information operation the agent is directed to perform by referring to the following list of equivalencies:

If the first indication is:	the amplification is:	code:
C	C/A	C
C	S	C
C	A	A
C/A	C	C
C/A	A	A
A	C/A	C/A
A	C	C*
A	S	S

* In some cases this combination will indicate two components, not amplification.

2. Stylistic Meaning

2.1 If the mode of presentation is the imperative, then the information operation cannot be C/A. Imperatives call for a constructed response (C) or the provision of a truth function (A).

2.2 If the construction of the solicitation involves completion/fill-in and the component contains a propositional function, then the mode of presentation is interrogative. If there is no propositional function, then the mode of presentation is declarative.

Examples

T/SOL: The basis for trade is what? (Interrogative)

T/SOL: The reason we export machinery is that we want to.... (Declarative)

2.3 If the construction of the solicitation is completion/fill-in, then the concept of ellipsis does not apply to that information to be provided by the agent addressed. The completion/fill-in aspect precludes the presentation of complete information.

2.4 If the mode of presentation is both declarative (non-completion construction) and interrogative, then the information presented in the declarative mode is considered interlarding, except when the declarative information is introduced by the following phrases or their equivalents, which are clues to amplification:

To put it another way...
The question I want to ask is...
In other words...
What I'm really asking is...

2.5 If the solicitation contains introductory remarks that are elliptical, but subsequent amplification within the move clarifies or completes the ellipsis, do not code elliptical construction.

2.6 If a conditional construction is used to refer to the condition of the agent, not to circumstances to be considered in relation to the information presented by the solicitor, do not code conditional construction:

Example

T/SOL: Tell me why we trade, if you can, John. (Not conditional)

2.8 If the solicitation is elliptical and serves only to state the conditions under which information presented in a previous solicitation is to be considered, then code elliptical and conditional and return to the previous solicitation to which it is related for indications of agent and propositional function and mode of presentation.

Example

T/SOL: What happened to the orange crop in 1960?
P/RES : It froze.
T/SOL: Suppose it hadn't frozen (Refer to first T/SOL)

2.9 If there is only one unit of interlarded information in a multi-component solicitation, the interlarded information is assigned to the task-component to which it is most directly related.

2.10 When the solicitation is presented in the declarative mode, but the information presented is a reason for soliciting and the directive is elliptical, code the solicitation imperative mode/elliptical construction.

Examples

T/SOL: I can't hear. = Speak louder, because I can't hear you.

T/SOL: You're mumbling. = Speak louder, because you cannot be heard.

3. Composition of the Soliciting Move

The composition of the soliciting move is described in terms of the information process activity and the logical process activity. The description involves a series of cross tabulations, for which the coding system includes relevant information.

In order to describe the composition of the move in terms of the number of primary activities called for, two coding columns are used for each primary activity.

For the information process activity, the first column represents the number of the information activities called for and the second column represents the specific combination of information activities called for.

For the logical process activity, two categories in column one are provided to indicate (1) that only one logical process is to be used once -- single; and (2) that one logical process is to be used twice -- repeat. If two different logical process activities are to be used, then the first logical process activity is coded in column one and the second logical process activity is coded in column two.

The following categories, using the symbols given above, represent the specific information activities or the specific combinations of information activities called for in the soliciting move. Column one describes the move in terms of the number of information operations solicited.

Column One	Column Two
1. Single: one information operation 2. Repeat Single: one information operation, but directive repeated 3. Single and Amplify: one information operation, but terms amplified	1. A 2. S 3. C 4. C/A 5. S/A
4. Repeat: one information operation, but to be applied twice	6. AA 7. SS 8. CC 9. C/A C/A 10. S/A S/A

Column One	Column Two
5. Double: two different information operations called for	11. A & S 12. A & C 13. A & C/A 14. A & S/A 15. S & A 16. S & C 17. S & C/A 18. S & S/A 19. C & A 20. C & S 21. C & C/A 22. C & S/A 23. C/A & A 24. C/A & S 25. C/A & C 26. C/A & S/A 27 S/A & A 28. S/A & S 29. S/A & C 30. S/A & C/A

The following categories, using the symbols given above, represent the the specific logical process activity or the specific combination of logical processes called for in solicitations.

Column One	Column Two
1. DEF	1. DEF
2. INT	2. INT
3. FAC	3. FAC
4. XPL	4. XPL
5. OPN	5. OPN
6. JUS	6. JUS
7. PRO	7. PRO
8. PFN	8. PFN
9. PFW	9. PFW
10. RPT	10. RPT
11. DIR	11. DIR
12. NCL	12. NCL
13. Single Process	
14. Repeat Same Process	

A coding of 13 (single process) and 1 (defining, from column two) indicates that the solicitor calls for only one act of defining. A coding of 14 (repeat same process) and a 1 (defining, from column two) indicates that the solicitor calls for two different acts of defining. A coding of 1 and 3 (defining in column one and fact stating in column two) indicates that in the same move the solicitor calls both for the analytic process of defining and for the empirical process of fact stating. In terms of information retrieval, any coding in column one, except the number 13 and 14, indicates that the solicitor calls for two different logical process activities in the move; thus, numbers 1 through 12 indicate a double process and each number indicates one of the two processes in the double activity solicitation.

CODING INSTRUCTIONS: STRUCTURING MOVE

1. Component

1.1 Code a separate component when the speaker switches function and/or topic and/or activity and/or time. If the speaker launches three or four topics or activities in a series, code a separate component for each.

Examples

T/STR: This is the end of our time for the debates between the two sides. I would like now to open the argument to questions from the floor and after that I'll let you vote. (Code three components: halting-excluding debating; launching following-up; launching voting)

T/STR: We will talk about the general flow of money, if we get to it today, //then the monetary policies, //and finally the systems for administering foreign investments. (Code three components: one announcing FOR, the 2nd announcing TMB, and the 3rd, FOR)

1.2 Code two separate components when the structuring move launches one sub-game "before" another. Because of "time sequence," code regulations for each component. If, however, the speaker launches two topics within his own report or debate, do not code two separate components.

Example

T/STR: We will have our reports and then we'll have questions from the floor. (Code two components: one launching reporting and the second launching following-up presentation)

1.3 Code as two separate components a move that announces a topic and also a sub-category of that topic, e.g., FSP and FHS. If, however, two topics are within the same sub-category, do not code two components.

Example

T/STR: I'd like to discuss the different types of barriers with you. Let's start off with tariffs the one you're familiar with. (Code two components: launching BAR and BAT, both for the present)

1.4 If a single statement in the structuring move has the effect of launching for the future and halting-excluding, code two components. This occurs most frequently at the end of a session.

Example

T/STR: We'll hold the rest of this in abeyance till tomorrow. (Code halting-excluding general activity and launching, future-other-session, TDI here the antecedent of "this," general activity, class)

2. Function

2.1 In some cases there is ambiguity as to whether the speaker is halting-excluding or launching for the future. If in context the speaker intends to include the particular topic, cognitive process, or classroom activity, then code launching for the future.

Example

T/STR: Let's leave out the other barriers for just a little while. Let's talk now only about tariffs. (Code two components both launching, BAT for the present and BAR for the future-this-session since the context of the discourse indicates that the teacher intends to talk about the other types of barriers shortly)

2.2 When the function is halting-excluding, code the dimensions of the game/sub-game in terms of "what" is halted-excluded and code the main dimensions only. Code beginning point only when it is other than the present. Do not code instructional aids, regulations, and agents with halting-excluding.

Example

T/STR: How about mobility of capital. I think we've talked enough about international labor. (Code halting-excluding with FHS only)

2.3 When the function is halting-excluding for the overall classroom activity, code only general activity in addition to the function; code a beginning point with halting-excluding only if the time is other than the present. Do not code agent, topic, cognitive process, regulations, duration and instructional aids.

Example

T/STR: We do not meet tomorrow. (Code halting-excluding general activity, and future-other session)

3. Method

3.1 When launching, the method may be announcing, or stating propositions, or announcing and stating propositions. When halting-excluding, the method may be only announcing or announcing and stating propositions. Table 37 provides a summary of the coding rules with each method.

4. Time

4.1 Code beginning point and duration only when coding the announcing of a topic, cognitive process, activity, or agent.

Table 37

CATEGORIES FOR CODING 'METHOD' IN STRUCTURING COMPONENTS

	LAUNCHING			HALTING-EXCLUDING	
	Announce	State Propositions	Announce and State Propositions	Announce	Announce and State Propositions
1. Activity	*	-	*	*	*
2. Agent	*	-	*	-	-
3. Announce Topic	*	-	*	*	*
4. Announce Logical Process	*	-	*	*	*
5. State Propositions-Topic	-	+	+	-	+
6. State Propositions-Logical Process	-	+	+	-	+
7. Time-Beginning Point	+	-	+	*	*
8. Time-Duration	+	-	+	-	-
9. Regulations	*	*	*	-	-
10. Instructional Aids	*	*	*	-	-
11. Reasons	*	*	*	*	*

+ Must code something in this dimension

* Code something in this dimension if it applies

- Must not code anything in this dimension

4.2 Code the activities of non-language routine, reporting (i.e., reporting by one pupil), taking attendance, voting, giving instructions, and debating by one speaker or one side for a duration of segment.

4.3 If from a previous move it is clear that "later" refers to future this session, future other session, future out of class, or future extra-unit, code the more specific appropriate beginning point rather than future-unspecified.

Example

T/STR: ...We'll talk about underdeveloped areas later. (This is Move #6 and Move #2 indicated that underdeveloped areas is for future other session. Code this move as future other session not future unspecified)

4.4 If the speaker launches a game/sub-game for "today" when part of the session is already passed, i.e., speaker has already dealt with substantive material, code segment as the duration.

5. Activity

5.1 Code the intended main activity of the sub-game. Sometimes the speaker uses a general term in place of a more specific one clearly indicated by the context.

Example

P/STR-A: Before I discuss the bill I'd like to give the reasons Kennedy introduced the bill.... (Code reporting since the context so indicates)

5.2 Code "general" if the speaker indicates that the game/sub-game will be oral but does not specifically indicate what type of oral game/sub-game. Such words as talk, discuss, speak, deal with, mention, comment, take up, come to, go into, look at, start, begin, come back to, go back to, turn to, move on to, study, finish up, and continue are clues for "general."

5.3 Code reviewing if the speaker signals this activity by using the word "yesterday." (In such cases do not code agent) If in that move the speaker goes beyond the reviewing and launches another activity, code that activity and do not code reviewing.

Example

T/STR: Then yesterday we pointed out that the three basic elements of world trade are exports, imports, and foreign investments. (Code reviewing, trade (TRA) and launching; do not code agent)

6. Agent

6.1 Code the agent in reference to the activity of the game/sub-game.

6.2 Code the principal agent of the sub-game. Often the speaker uses the plural "Let's" or "We" or the singular "I," but the context clearly indicates the intent is the opposite.

Example

P/STR-A: Before we begin discussing the bill, we must discuss the impact of trade.... (Code agent as pupil since this is a pupil report)

6.3 Code "all pupils" for non-language routine activities such as collecting homework, turning in texts, and distributing newspapers.

6.4 If a pupil structures to ask the teacher a question, code agent as "pupil and teacher" even though the teacher may subsequently choose another pupil to respond to the question.

6.5 When the speaker bases the discourse on a chart or graph and requests the class to look at the chart, follow along with him, and discuss it with him, code agent as "teacher and all pupils." (Also code regulations, general activity, and charts under instructional aids)

Example

T/STR: Now will you look at this little graph over here -- I think you can see these bar graphs in any section of the room...About twenty-five out of thirty per cent of all exports will go to West Europe.... (Code class, general, regulations, and graphs)

7. Topic

7.1 Code announcing topic and, if appropriate, announcing logical process with stating propositions when the stated propositions have the following characteristics, which have the effect of explicit announcing:

a. The topic breaks with the previous discourse.
b. The propositions are short in length, usually just several lines.
c. The speaker uses general terms and implies that he will go into the specifics of the topic. The general terms are often "kinds," "types," "devices," "ways," or "reasons."
d. A soliciting move follows the structuring move in order to pursue the topic further.

Examples

T/STR :	There are two kinds of investments.
T/SOL:	What is one, Bob? (Code stating propositions FOR/FAC and announcing FOR)
T/STR :	And there are a number of reasons why Britain didn't join the Common Market.
T/SOL:	Why didn't she? (Code stating propositions PFT/XPL and announcing PFT/XPL)

7.2 Code announcing topic if the speaker indicates the content of the discourse by giving the content of a graph or other instructional aid that he intends to use in the discourse.

Example

T/STR:	Now the author talks about three elements of trade, imports, exports, and foreign investments. (Code announce TRA)

7.3 Do not code announcing topic and announcing cognitive process when the speaker himself asks a rhetorical question and then answers it, i.e., does not give the source of the question). If the speaker raises a question and mentions its source, code announcing topic and announcing cognitive process. This is not taken as a rhetorical question.

Example

T/STR: Now, what else has Kennedy done to increase trade? He has proposed legislation that . . . (Code stating propositions PFT/XPL)

7.4 When the speaker structures the discourse in order to ask a question, do not code announcing topic unless he specifies the topic of the question.

Examples

P/STR: I have a question. (Do not code announcing topic)

P/STR: I have a question on exchange control. (Code announcing BAE)

7.5 Code announcing trade-general when the activity is taking an examination or writing for this unit, even though the speaker does not explicitly indicate the topic. Code the appropriate topic and logical process as justifying (JUS) under announcing and when the activity is debating and the speaker refers to the "negative" or "affirmative" or "arguments" or the like If the activity is voting, code the appropriate topic and cognitive process as opining (OPN) under announcing.

Example

T/STR: Now let's see how we'd vote as a class on Kennedy's bill. (Code announcing PFT, announcing OPN, voting, and class)

7.6 Code announcing topic-unspecified when the speaker indicates a "point" or "item" or "thing" and does not remove the vagueness in that move. If the speaker does specify the topic later in the move, code the appropriate topic and stating propositions if it applies. If the speaker uses pronouns that have a referent in the discourse, code the appropriate topic and not topic-unspecified.

Examples

T/STR: Just one more point before the bell rings. (Code announcing topic-unspecified)

T/STR: Let me add something. Although we have some of our own bauxite we import most of it. (Code announcing IMX and stating propositions IMX/FAC)

8. Logical Process

8.1 When more than one cognitive process is designated within a single component, code according to the following priority system:

a. JUS
b. XPL
c. OPN
d. FAC
e. INT
f. DEF
g. NCL

8.2 When coding announcing cognitive process, also code the topic associated with it even though the topic may be only contextually identified.

Example

T/STR: Now let's go into the relationship. The U.S. has a capital... (Code announcing XPL and announcing FCE since previous move dealt with FCE and stating propositions FCE/XPL)

9. Instructional Aids

9.1 Use the following priority system (top priority is listed first) when more than one of the instructional aids is involved and the principal one cannot be readily determined:

a. Charts; graphs; tables.
b. Maps; globes.
c. References other than class text.
d. Film.
e. News media.
f. Field trip.
g. Other resources.
h. Homework.
i. Teacher material (outline; chalkboard; ditto).
j. Textbook of the unit.

9.2 Code textbook, teacher material, or news media when the chart or graph or map used or referred to is contained in them.

Example

T/STR: The imports of natural resources are indicated in the chart on page 21. (Code textbook)

9.3 Code instructional aids if the context clearly indicates that the speaker is using a particular instructional aid. The speaker himself need not indicate the use of the aid. This often occurs when the speaker refers to an instructional aid.

9.4 If the speaker is an audio-visual device, such as a film, do not code instructional aids.

9.5 Code instructional aids if the activity is reporting or debating by a pupil as assigned earlier by the teacher. Use the priority list in 9.1. Code homework if no higher category is indicated.

Examples

P/STR-A: I interviewed Mr. Jackson of the bakery on our block and he said that he imports... (Code field trip)

P/STR-A: I favor judging the Common Market on its effectiveness.... (Code homework)

10. Reason Giving

10.1 In addition to explicit reasons, code reason giving when the speaker uses such words as "important," "worthwhile," "major," "interesting," and "significant" when discussing ideas, concepts or policies.

11. Regulations

11.1 Code regulations when the speaker indicates some rule about playing the game/sub-game in reference to the following:

a. Scope: e.g., details, depth, general, specifics, introductory, basically.
b. Sequence: e.g., first (we'll do this), last, finally, imports before exports, sixth (always in relation to something else).

c. Associations: e.g., follow along, keep in mind, notice, don't forget, beware, warn (you), remember the relationship.

d. Administration: e.g., "This test will count on your grade," "I'm not giving you this test."

11.2 Do not code regulations when the speaker indicates the activity with "come back to" or "go back to."

Example

T/STR: And I'll come back to that later. (Do not code regulations, code general activity)

Coding Format

Each component is coded as follows:

*(1) Number (cardinal) of components in this structuring move
*(2) Number (cardinal) of components in this structuring move
*(3) Number (ordinal) of this component within this structuring move
(4) Function
(5) Method
(6) Topic on which propositions are stated
(7) Logical operation of propositions
(8) Substantive topic announced
(9) Instructional topic announced
(10) Logical process announced
(11) Activity announced
(12) Agent announced
(13) Beginning point in time announced
(14) Duration of time announced
(15) Regulations announced
(16) Instructional aids
(17) Reason giving

Example No. 1

Excerpt From Protocol.

T/STR: Now let's turn to the reason why we trade for a few minutes.

---

* The electronic computer uses (1) to identify and tabulate the number of components included in the coded move. The computer uses (2) with (3) to identify the position of the components in a structuring move. (1) is coded only with the first entry; (2) and (3) are coded for each component.

Code

(1) One
(2) One
(3) First
(4) Launching
(5) Announcing
(6) -
(7) -
(8) Trade (TRA)
(9) -
(10) Explaining
(11) General-Oral
(12) Teacher and All Pupils
(13) Present
(14) Segment
(15) -
(16) -
(17) -

Interpretation.

The teacher structures for one sub-game. That sub-game is the first and only sub-game of the structure move. The teacher performs the function of launching by announcing that beginning now and for a part of the session the entire class of pupils and teacher will talk, giving explanations about the substantive topic of trade. The teacher does not state propositions about trade, announce an instructional topic, give reasons or regulations, nor call for the use of any instructional aids, and therefore, spaces 6, 7, 9, 15, 16, 17 are left blank.

Example No 2

Excerpt From Protocol

T/STR: This is the end of our time for the debates between the two sides. I would like now to open the argument to questions from the floor and after that I'll let you vote.

Code

	(First Component)	(Second Component)	(Third Component)
(1)	Three	-	-
(2)	Three	Three	Three
(3)	First	Second	Third
(4)	Halting-Excluding	Launching	Launching
(5)	Announcing	Announcing	Announcing
(6)	-	-	-
(7)	-	-	-
(8)	-	Promoting Free Trade	Promoting Free Trade

	(First Component)	(Second Component)	(Third Component)
(9)	-	-	Opining
(10)	-	-	-
(11)	Debating	Follow-up	Voting
(12)	-	Teacher and All Pupils	All Pupils
(13)	-	Present	Future This Session
(14)	-	Segment	Segment
(15)	-	Regulation given	Regulation
(16)	-	-	-
(17)	-	-	-

Interpretation.

The teacher structures three sub-games. In the first of the three components the teacher halts-excludes by announcing the activity of debating. It is understood that the halting-excluding is to take effect presently. The teacher continues in the structuring move to launch a follow-up (on the debate) consisting of questions from the floor by the entire class on the topic of promoting free trade. This will begin presently and continue for a part of the session only. The teacher performs the function of launching by using the method of announcing. The teacher continues to launch, announcing that later in this session for a segment of the session all the pupils will vote, giving their opinions in regard to the topic of promoting free trade. The teacher gives regulations (time sequence) relating to the last two components.

APPENDIX C

TEST RESULTS AND CLASSROOM DISCOURSE

In teaching, as in all practical activities serving human purposes, some criterion of success is needed if teachers are to know whether they are accomplishing what they set out to teach. The criterion of success for both teachers and students playing the game of teaching is evidence that the student participants have learned the desired skills and knowledge; learning on the part of students is the successful outcome or "upshot" of teaching. It is therefore important to distinguish learning as the outcome of teaching from the activity of teaching itself. Discussions about teaching and learning have been plagued by confusion between the two. The teacher's job is to teach students; he does not, indeed cannot, "learn" them.

TEACHING AND LEARNING OUTCOMES

Experience in carrying out this research has led us to recognize the importance of distinguishing the perspective from which the teacher in the classroom evaluates learning outcomes and the perspective from which the researcher interested in the consequences of classroom discourse might describe outcome variables. Without doubt, it is appropriate for the teacher to identify certain skills and knowledge that he feels his students should learn and then to judge the success or failure of his teaching on the basis of whether his students in fact do learn the desired skills and knowledge. But for research aimed at discovering relationships between linguistic variables in the classroom and subsequent learning outcomes, it is more appropriate to approach the problem of identifying the learning outcomes on the basis of observable consequences apart from any notion of what should be learned. It is, therefore, more useful for the researcher to raise the question, "What kinds of classroom events are related to what kinds of learning outcomes?" rather than the question, "What are the relationships between discourse variables and measures of learning based on some notion of what should be learned?" In other words, descriptive investigation of outcome variables is as significant as descriptive investigation of classroom discourse itself.

Study of the relationships between classroom variables and measures of learning thus becomes appropriate once the complex events of the classroom and the outcome variables have been systematically and reliably described. This research focused primarily on description of classroom variables; full-scale study of the outcomes of instruction was beyond the scope of the present project. However, preliminary investigations of the relationships between classroom variables and outcome measures represented by scores on the test of economic knowledge and the attitude scale (see Appendix D) were undertaken and may serve as a useful guide in developing subsequent research.

The outcome measures developed in the first phase of the research -- the test of economic knowledge and the attitude scale -- are limited measures of the outcomes of four days of teaching. The consequences of teaching are no less diverse and complex than is the process of teaching, and to attempt to incorporate the results of teaching in a single test score is to oversimplify the problems involved in describing the outcomes of instruction. Cronbach has expressed this idea cogently:

> Outcomes of instruction are multidimentional, and a satisfactory investigation will map out the effects of the course along these dimensions separately. To agglomerate many types of post-course performance into a single score is a mistake, since failure to achieve one objective is masked by success in another direction. Moreover, since a composite score embodies (and usually conceals) judgments about the importance of the various outcomes, only a report that treats the outcomes separately can be useful to educators who have different value hierarchies. (6:235).

Recognizing, then, that the test on international trade and the attitude scale used in this research represent very limited measures of learning outcomes, the following discussion of classroom variables and outcome variables is presented principally as an empirical basis for guiding further research by suggesting hypotheses for investigation. In the following discussion, no effort is made to present the results of these preliminary investigations in complex statistical terms which are likely to misrepresent the purpose of this study. The results are discussed rather in terms of inspection of the data, with the aim of posing problems for subsequent investigation.

The scores on the test were analyzed, taking into account the factors of verbal intelligence and of class size. The pairs of vocabulary scores and scores on the post-test, which measured knowledge of international trade of the 339 students for whom all relevant scores were available, were used to determine the regression of test scores on verbal intelligence. Each test score was then adjusted by subtracting from the student's score the score predicted for the student on the basis of his verbal intelligence. The mean adjusted score for each class was then determined as shown in Table 38. The table also gives the estimated standard error for each mean. The standard error was determined by taking the square root of a pooled estimate of the variance of the adjusted scores within each class divided by the number in each class.

When the ratio of each class mean to its estimated standard error is examined (Table 38), it is observed that the ratios for seven of the 15 classes, namely Classes 2, 4, 5, 9, 13, 14, and 15, are larger than 1.6445, the normal deviate value which is exceeded by chance in either direction only 10 per cent of the time. It seems reasonable, therefore, that the means for Classes 2, 4,

Table 38

MEAN ADJUSTED SCORES ON THE TEST OF ECONOMIC KNOWLEDGE, STANDARD ERROR OF THE MEAN, AND CLASS SIZE FOR EACH OF THE FIFTEEN CLASSES

Class	Mean Adjusted Score	Standard Error of the Mean	Class Size
2	+5.44	1.46	28
4	+2.99	1.49	27
5	+2.73	1.46	28
3	+2.62	1.69	21
12	+2.09	1.99	15
8	+2.09	1.69	21
6	+1.81	1.77	19
1	+0.01	1.55	25
10	-1.28	1.87	17
11	-2.38	1.52	26
9	-2.40	1.46	28
7	-2.70	1.61	23
14	-3.00	1.69	21
13	-3.10	1.69	21
15	-6.78	1.77	19

and 5 indicate an average performance which exceeds the expected, while the means for Classes 9, 13, 14, and 15 indicate an average performance which falls short of the expected, and that these results are not due to chance. For purposes of describing relationships between dimensions of pedagogical moves, teaching cycles and learning, Classes 2, 4, and 5 are regarded as having significantly higher than predicted mean scores on the post-test on international trade; Classes 9, 13, 14, and 15, on the other hand, are regarded as having significantly lower than predicted mean scores on that test.

PEDAGOGICAL MOVES AND TEST RESULTS

Table 39 presents data relevant to the investigation of the relationships between pedagogical moves and test results and teaching cycles and test results. Table 39A presents data for teacher activity in terms of percentages of total moves and lines and percentages for each of the pedagogical moves. No one factor sharply differentiates the three classes judged significantly high from the four classes judged significantly low. As a group, however, the teachers in the "high" group are relatively less active in terms of percentage of lines spoken than are the teachers in the "low" group. In the "high" group, no more than 61.5 per cent of the lines are spoken by any of the three teachers. In contrast, three of the teachers included in the "low" group (in Classes 9, 13, and 14) speak slightly more than 70 per cent of the lines; the exception is Teacher 15 who speaks 60.8 per cent of the lines.

With respect to the percentages of pedagogical moves, there seems to be little to differentiate the two groups, with the exception, perhaps, of the percentages of structuring moves. The range for the three classes judged significantly high is very restricted (4.1 per cent to 5.1 per cent), but the group judged significantly low includes both extremes of the range for all 15 classes (1.1 per cent and 13.2 per cent). This suggests that there may be an optimum frequency for the use of the structuring move by the teacher as a way of launching interaction between teacher and pupils and as a means of introducing subject matter.

Table 39B presents data on certain dimensions of the soliciting move for the two groups and for all classes combined. The data are presented in terms of teacher activity, with the base in each case being all substantive solicitations by the teacher. One factor in which there seems to be some difference between the two groups is the teacher's use of solicitations calling for a pupil to assign a truth function. The mean of means for the "high" group (12.9 per cent) is roughly the same as the mean of means for the group of 15 classes combined (12.5 per cent) but the mean of means for the "low" group is considerably below it (8.2 per cent).

Table 39A

DATA ON PEDAGOGICAL MOVES FOR THREE CLASSES JUDGED SIGNIFICANTLY HIGH AND FOUR CLASSES JUDGED SIGNIFICANTLY LOW

Class	$\frac{\text{T Moves}}{\text{All Moves}}$	$\frac{\text{T Lines}}{\text{All Lines}}$	$\frac{\text{T/SOL}}{\text{All Moves}}$	$\frac{\text{T/RES}}{\text{All Moves}}$	$\frac{\text{T/STR}}{\text{All Moves}}$	$\frac{\text{T/REA}}{\text{All Moves}}$
All Classes						
Mean of Means	62.6	72.2	29.0	3.4	5.5	24.3
Range	57.8-72.0	60.3-92.8	21.4-36.8	1.1-5.9	1.1-13.2	20.2-28.5
Three Classes Judged Significantly High						
Mean of Means	59.7	61.0	28.2	3.3	4.6	23.1
Mean of Class 2	59.1	61.5	30.3	1.2	4.5	22.4
Mean of Class 4	61.5	60.3	29.6	2.8	4.1	24.8
Mean of Class 5	58.4	61.3	24.8	5.8	5.1	22.0
Four Classes Judged Significantly Low						
Mean of Means	64.1	69.1	28.5	3.4	5.7	26.2
Mean of Class 9	72.1	72.0	29.2	1.7	13.2	27.9
Mean of Class 14	66.6	72.6	29.6	2.7	4.8	28.4
Mean of Class 13	60.0	70.9	30.8	3.7	1.1	24.3
Mean of Class 15	57.8	60.8	24.5	5.3	3.6	24.2

Table 39B

DATA ON SOLICITING MOVES FOR THREE CLASSES JUDGED SIGNIFICANTLY HIGH

AND FOUR CLASSES JUDGED SIGNIFICANTLY LOW

Class	$\frac{\text{T/SOL-A}}{\text{T/SUB SOL}}$	$\frac{\text{T/SOL-C}}{\text{T/SUB SOL}}$	$\frac{\text{T/SOL/FAC}}{\text{T/SUB SOL}}$	$\frac{\text{T/SOL/XPL}}{\text{T/SUB SOL}}$	$\frac{\text{T/SOL-C/FAC}}{\text{T/SUB SOL}}$	$\frac{\text{T/SOL-C/XPL}}{\text{T/SUB SOL}}$
All Classes						
Mean of Means	12.5	78.9	33.9	44.8	24.5	38.3
Range	1.6-21.0	62.4-94.4	19.0-49.4	31.0-60.4	10.0-41.0	24.5-53.9
Three Classes Judged Significantly High						
Mean of Means	12.9	76.0	25.2	42.2	17.2	36.6
Mean of Class 2	11.8	75.3	25.3	53.2	17.2	43.0
Mean of Class 4	10.9	81.7	31.4	42.3	24.5	38.9
Mean of Class 5	16.0	71.0	19.0	31.0	10.0	28.0
Four Classes Judged Significantly Low						
Mean of Means	8.2	83.7	34.0	48.1	24.8	42.8
Mean of Class 9	1.6	94.4	25.8	54.8	24.1	51.6
Mean of Class 14	8.4	81.7	20.9	55.5	15.2	47.6
Mean of Class 13	7.4	87.5	49.4	37.6	41.0	34.6
Mean of Class 15	15.2	71.2	39.9	44.4	19.0	37.4

In terms of the logical dimension of soliciting, the teachers in the "low" group make greater use of the empirical mode than do the teachers in the "high" group. The mean of means for the four classes judged significantly low is 34.0 per cent for fact stating and for explaining it is 48.1 per cent; for the three classes judged significantly high, the figures are 25.2 per cent for fact stating and 42.2 per cent for explaining. When constructing is the information process activity of the teacher solicitation and fact stating or explaining is the logical dimension, further differences between the two groups are observed. Teachers in the "low" group require pupils to construct a factual or explanatory response to a greater percentage of their substantive soliciting moves than do teachers in the "high" group. For the four classes judged significantly low, the percentage for teacher solicitations calling for the construction of factual responses is 24.8, and the percentage for teacher solicitations calling for the construction of explanatory responses is 42.8. The comparable percentages for the group of three classes judged significantly high are 17.2 and 36.6. Teachers in the "high" group thus place less reliance on eliciting constructed empirical responses than those in the "low" group. Fact stating and explaining soliciting moves that call for a constructed response by the pupil comprise more than two-thirds of the teacher moves in the "low" group and only slightly more than half in the "high" group.

Table 39C presents data on the congruence between teacher-soliciting components and pupil-responding components. (See Chapter Three, pp. 65-71, for discussion of soliciting-responding congruence.) The only notable difference between the two groups is in the area of ignored soliciting components: a higher percentage of soliciting components is ignored by pupils in the "high" group than in the "low" group.

The data on dimensions of teacher structuring moves are presented in Table 39D. One notable tendency is for some of the classes judged significantly low to deviate rather sharply from the means, while the range for the three classes judged significantly high is relatively restricted. In each of the first four items listed in Table 39D, extremes for the group of all 15 classes are found in the four classes judged significantly low. This includes the highest percentage (100 per cent) for teacher launching components, the lowest (0 per cent) and the highest percentage (11.0 per cent) for teacher halting/excluding components, the highest percentage (73.1 per cent) for teacher launching and announcing components, and the lowest percentage (1.9 per cent) for teacher launching and stating propositions components. Although these variables are not independent, it may be that in these dimensions of the structuring move there is an optimum frequency for the use of the structuring move. There is a somewhat higher percentage of structuring components involving reason-giving in the "high" group (mean of means: 29.4 per cent) as compared with the "low" group (mean of means: 21.6 per cent).

Table 39C

DATA ON CONGRUENCE OF SOLICITING AND RESPONDING COMPONENTS FOR THREE CLASSES JUDGED SIGNIFICANTLY HIGH AND FOUR CLASSES JUDGED SIGNIFICANTLY LOW

Class	CONGRUENCE OF PUPIL RESPONDING COMPONENT WITH TEACHER SOLICITING COMPONENT					
	Logical Process			Information Process		
	Congruent	Incongruent	Ignored	Congruent	Incongruent	Ignored
All Classes						
Mean of Means	92.2	3.8	4.0	89.6	6.9	4.1
Range	86.7-96.6	0.-7.8	0.-11.0	85.0-95.5	0.8-10.6	0.-10.2
Three Classes Judged Significantly High						
Mean of Means	88.4	4.7	6.9	86.5	6.7	6.8
Mean of Class 2	90.6	3.4	6.0	88.0	6.0	6.0
Mean of Class 4	87.9	7.8	4.3	86.4	9.2	4.4
Mean of Class 5	86.7	2.8	10.5	85.1	4.8	10.1
Four Classes Judged Significantly Low						
Mean of Means	93.2	4.7	2.1	90.0	7.5	2.5
Mean of Class 9	91.6	2.9	5.5	85.9	8.3	5.8
Mean of Class 14	91.2	7.0	1.8	89.1	9.1	1.8
Mean of Class 13	94.9	4.7	0.4	90.9	8.7	0.4
Mean of Class 15	95.2	4.3	0.5	94.2	3.7	2.1

Table 39D

DATA ON STRUCTURING MOVES FOR THREE CLASSES JUDGED SIGNIFICANTLY HIGH AND FOUR CLASSES JUDGED SIGNIFICANTLY LOW

Class	T/STR-Launch	T/STR-Halt/Exclude	T/STR-Launch-Announce	T/STR-Launch State Propositions	T/STR-Launch-Announce & State Propositions	T/STR with Reason-Giving
	T/STR	T/STR	T/STR	T/STR	T/STR	T/STR
All Classes						
Mean of Means	95.4	4.6	48.9	13.9	32.6	24.2
Range	89.0-100.	0-11.0	8.5-73.1	1.9-36.7	3.3-56.3	9.9-50.0
Three Classes Judged Significantly High						
Mean of Means	94.5	5.5	58.0	5.0	31.5	29.4
Mean of Class 2	95.2	4.8	50.8	4.8	39.6	30.2
Mean of Class 4	93.3	6.7	62.2	6.7	24.4	31.1
Mean of Class 5	95.1	4.9	61.0	3.6	30.5	26.8
Four Classes Judged Significantly Low						
Mean of Means	91.8	5.2	54.5	9.0	31.3	21.6
Mean of Class 9	89.0	11.0	33.0	16.5	39.5	24.2
Mean of Class 14	100.	0	73.1	1.9	25.0	21.2
Mean of Class 13	96.2	3.8	53.8	11.6	30.8	17.2
Mean of Class 15	94.0	6.0	58.2	6.0	29.8	23.9

The percentage distributions for the "high" and "low classes for the five types of reacting moves identified in Chapter Five are presented in Table 39E. As a group, the four teachers in the classes judged significantly low devote a relatively high percentage of their reacting moves to substantive reactions and a relatively low percentage of their reactions to rating reactions. The mean of the means of substantive reactions in the "low" group is 15.9; in the "high" group it is 11.1. For rating reactions, it is 44.4 per cent for the "low" group and 55.1 per cent for the "high" classes. Not only are the teachers in the "low" classes more likely to make substantive reactions to pupil moves, but two of them also show a tendency to combine substantive with rating components. This type of reaction comprises more than half of the teacher reactions in Class 9 (54.7 per cent) and more than a third (35.2 per cent) in Class 14. In contrast, the mean of means for the "high" group is 19.4 per cent, with no teacher devoting as much as one-fourth of his reactions to this type. Differences between the two groups are also observed for procedural reactions and for reactions with both substantive and procedural components, which, however, involve rather low frequencies. With respect to the type of rating which predominated, both groups are equally positive in their rating reactions.

TEACHING CYCLES AND TEST RESULTS

Certain tentative hypotheses may be formulated on the basis of comparing the "high" and "low" learning groups in terms of dimensions of teaching cycles. Perhaps the most clear-cut involves cycle rate (Table 39F), which was one of the factors in the analysis of teaching cycles.

Table 31 presented the Cycle Activity Indexes (number of teaching cycles per minute of class time) for each of the 15 classes and for the group as a whole. Both the mean and the median for the group is 1.8. The mean of means for the group as indicated in Table 39F is 1.7. The three classes that scored significantly higher than expected on the post-test (Classes 2, 4, and 5) are all remarkably close to the mean and the mean of means for the group. The indexes for Classes 2 and 4 are both 1.9 and for Class 5 it is 1.8. These indexes indicate a moderate pace of slightly less than two cycles per minute. The four classes that scored significantly lower than expected, however, all deviated sharply from that figure. This group includes the fastest paced class, Class 14, with an index of 3.0 (an average of three cycles per minute) as well as the three slowest paced classes, Classes 11, 13, and 15, with cycle activity indexes of 0.9, 1.1, and 1.2. Even taking into account the limited size of the sample, one may hypothesize on the basis of these data that there may be an optimum pace of classroom verbal activity for achieving certain kinds of verbal learning.

Table 39E

DATA ON REACTING MOVES FOR THREE CLASSES JUDGED SIGNIFICANTLY HIGH AND FOUR CLASSES JUDGED SIGNIFICANTLY LOW

Class	$\frac{\text{T/REA-SUB}}{\text{T/REA}}$	$\frac{\text{T/REA-RAT}}{\text{T/REA}}$	$\frac{\text{T/REA-PRC}}{\text{T/REA}}$	$\frac{\text{T/REA-SUB/PRC}}{\text{T/REA}}$	$\frac{\text{T/REA-SUB/RAT}}{\text{T/REA}}$	$\frac{\text{T/REA-RAT POS}}{\text{T/REA-RAT}}$
All Classes						
Mean of Means	16.9	43.9	7.1	3.2	28.3	80.0
Range	9.9-29.4	21.9-60.2	1.5-13.5	1.3-8.1	13.7-54.7	90.2-60.7
Three Classes Judged Significantly High						
Mean of Means	11.1	55.1	9.5	1.5	19.4	82.8
Mean of Class 2	10.6	53.0	11.0	1.7	13.7	81.5
Mean of Class 4	12.7	52.2	10.2	1.6	23.3	85.4
Mean of Class 5	9.9	60.2	7.4	1.3	21.2	81.4
Four Classes Judged Significantly Low						
Mean of Means	15.9	44.4	5.5	2.3	31.9	80.0
Mean of Class 9	20.3	21.9	1.5	1.6	54.7	86.7
Mean of Class 14	13.0	42.3	6.7	2.8	35.2	73.3
Mean of Class 13	17.9	59.9	3.7	2.3	16.2	80.0
Mean of Class 15	12.5	53.5	10.2	2.3	21.5	80.1

Table 39F

DATA ON FORMALLY-ORDERED TEACHING CYCLES FOR THREE CLASSES JUDGED SIGNIFICANTLY HIGH AND FOUR CLASSES JUDGED SIGNIFICANTLY LOW

Class	Number of Cycles	T/STR-Initiated Cycles	Cycles That Include REA Following RES
	Minutes of Class Time	All Cycles	All Cycles
All Classes			
Mean of Means	1.7	18.4	26.7
Range	0.9-3.0	3.7-41.2	12.8-37.9
Three Classes Judged Significantly High			
Mean of Means	1.9	17.4	26.1
Mean of Class 2	1.9	17.1	30.0
Mean of Class 4	1.9	15.4	22.5
Mean of Class 5	1.8	19.7	25.8
Four Classes Judged Significantly Low			
Mean of Means	1.6	18.2	22.7
Mean of Class 9	0.9	41.2	12.8
Mean of Class 14	3.0	15.6	18.2
Mean of Class 13	1.1	3.7	31.1
Mean of Class 15	1.2	12.3	28.8

A second dimension of teaching cycles which was investigated was the proportion of teacher-initiated in contrast to pupil-initiated teaching cycles (Table 39F). Of the 4,592 formally-ordered teaching cycles, 84.5 per cent are initiated by teachers. It was also noted that teachers differed in the extent to which they used structuring moves to initiate the cycles. For the 15 classes as a group, 16 per cent of all cycles are initiated by teachers using structuring moves, rather than the more common soliciting moves. The mean of means for the 15 classes is 18.4 per cent. As has already been noted, structuring moves may be used for different purposes and in different ways (see Chapter Four), but in terms of teaching cycles they are regarded simply as an alternate means of inaugurating a verbal exchange in the classroom. The three teachers of the classes that scored significantly higher on the post-test do not differ markedly from the mean of means for the group, 18.4 per cent. In Class 2, 17.1 per cent of the cycles are initiated by teacher structuring moves. For the teachers in Classes 4 and 5 the figures are 15.4 per cent and 19.7 per cent. Of the four classes in the low-learning group, two do not deviate sharply from the mean of means, but one of the others, Class 9, has the highest percentage of teacher-structure-initiated cycles (41.2), and the other class, Class 14, has the lowest percentage (3.7). While the differences between the high and low learning groups with respect to teacher structuring may not be as well-defined as in the case of cycle rate, it may be that more intensive study of teaching cycles initiated by teacher structuring moves will reveal differences in kind and function as well as the differences in degree already noted.

A third area which offers promise for future investigation is one involving those teaching cycles that do not have reacting moves following responding moves. While structuring moves serve the function of getting a cycle under way, reacting moves often serve to seal them off, sometimes by rating the previous moves, sometimes by modifying or expanding them. Of the two reflexive moves, responding and reacting, it is the reaction which is the optional one; the response is elicited by the solicitation, but the reacting move may or may not be made depending on the circumstances and the inclination of the player.

Of the twenty-one formally-ordered teaching cycles, four (cycles 5, 6, 14, and 15) do not include reacting moves following responses. For the 15 classes as a group, these four cycles account for 27.1 per cent of the total number of cycles, with a mean of means of 26.7 per cent. The range is from 12.8 per cent (Class 9) to 37.9 per cent (Class 6). Again, the three high-learning classes are reasonably close to the mean of means (26.7 per cent): Class 2 is 30.0 per cent, Class 4 is 22.5 per cent, and Class 5 is 25.8 per cent. Of the four low-learning classes, two (Classes 13 and 15) are also close to the mean of means (31.1 per cent and 28.8 per cent), but Classes 11 and 13 are the two lowest ranking classes with percentages of 12.8 and 18.2, indicating that reacting moves are more likely to follow responses in these classes than in the other 13.

While many kinds of relationship are possible between various dimensions of pedagogical moves, teaching cycles and test results, only a few are presented here as illustrative of the direction future research may take. Whether the factors cited are actually related to any of the identifiable criteria of success in teaching remains to be determined. Future research using a different sample and specifically designed to determine the presence or absence of such relationships may prove fruitful. It is unlikely, however, that any single dimension of classroom discourse described here will be found to have a consistent relationship to any single dimension of learning. Rather, it seems likely that further studies might seek to identify clusters of variables -- types of teaching profiles -- which might possibly be related to certain outcome variables.

ADDITIONAL ANALYSES

In addition to the investigations reported thus far, numerous additional analyses were pursued. These analyses were concerned with the relation of particular variables in the classroom discourse to performance on the test of economic knowledge or to attitude change as estimated by pre-post differences obtained on the attitude scale. In general, consistently null results were obtained in these additional analyses. These results are consistent with expectations. As suggested above, one would not reasonably expect any appreciable variability in test performance or attitude scale responses to be accounted for by any single dimension of classroom discourse. Certainly the complex cognitive activities involved in academic learning are multi-determined.

In summary, the results of the investigation of classroom variables and outcome variables suggest that the next step in the study of teaching should be to expand the descriptive focus, using the techniques developed in the present project to describe not only classroom discourse but also the variety of outcomes that might be associated with classroom activity.

APPENDIX D

TEST OF KNOWLEDGE OF INTERNATIONAL TRADE

NAME________________

SCHOOL______________

DATE________________

SECTION I

Listed below are a number of terms commonly used by economists in discussions of international trade. You are to define each of these terms in two ways: (I) first, write a general definition of the term, giving the major ideas or characteristics to which the term refers; (2) second, give a specific example of the term. Even if you don't know an actual example of some of the terms, make up an example that is reasonable.

For example, suppose you were asked to define the term, "International trade." First, give a general definition, "Buying and selling of goods and services between two countries." Then, give a specific example, "The U.S. buys coffee from Brazil, and Brazil buys machinery from the U.S."

Remember, for each term, write a general definition and then give a specific example.

1. specialization
   general definition:

   specific example:

2. factors of production
   general definition:

   specific example:

3. exports
   general definition:

   specific example:

4. imports
   general definition:

   specific example:

5. foreign investment
   general definition:

   specific example:

6. tariff
   general definition:

   specific example:

7. quota
   general definition:

   specific example:

8. exchange control
   general definition:

   specific example:

9. export controls
   general definition:

   specific example:

10. rate of exchange
    general definition:

    specific example:

SECTION 2

Briefly answer each of the following questions. Simply write the main idea or the major points answering each question, without going into too much detail.

A sample question and the kind of answer required is presented below.

Question:	What is the fundamental reason for countries trading with each other?
Answer:	Because of the uneven distribution of factors of production, such as human skills, natural resources, and capital equipment.

1. In what important ways does international trade differ from domestic trade?

2. Explain why countries specialize in production of some goods and trade with other countries to obtain certain other goods they need rather than become totally self-sufficient.

3. How do the factors of production influence a country's productivity?

4. Why is the largest amount of international trade between highly industrialized countries?

5. How is the U.S. economy dependent on exports?

6. How is the U.S. economy dependent on imports?

7. What are the major reasons for direct foreign investment?

8. How does the trade between two countries influence the economy of each country?

9. What are the major reasons for a country maintaining barriers to international trade?

10. What are the major reasons for a country reducing barriers to international trade?

SECTION 3

Briefly answer each of the following questions. A sample question and the kind of answer required are presented below.

Question:	The U.S. lacks industrial diamonds but produces large quantities of machinery. How does the U.S. obtain industrial diamonds?
Answer:	Import diamonds from countries that produce diamonds and export machinery to countries that need machinery.

1. A heavily wooded country, such as Finland, concentrates on industries directly related to wood products and depends on imports from other countries for many other kinds of products she needs. Why doesn't Finland try to become more self-sufficient and produce the products she now has to import?

2. Even if India received huge sums of money and equipment for automobile factories, why would it still be difficult for her to put millions of unemployed people to work immediately producing automobiles?

3. Burmese farmers desperately need American farm equipment and other American goods. Yet, there is relatively little trade between Burma and the U.S. today. Why?

4. Why does our country have to export certain agricultural products such as wheat?

5. Although America is a land of coffee drinkers, why do we buy all our coffee from other countries instead of trying to grow our own coffee?

6. Why does General Motors have an automobile factory in Canada when it already has factories a few miles away in the United States?

7. If we cut down the amount of coffee we buy from Brazil, how does that affect Brazil's import of goods from us?

8. Suppose you were a Congressman arguing for an increase in the tariff imposed on bicycles imported from England. What would be the major reasons you'd use to support your argument? State these reasons in specific terms directly related the manufacturing and importing of bicycles.

9. Suppose you were a Congressman arguing for a reduction in the tariff imposed on peanuts imported from Nigeria. What would be the major reason you'd use to support your argument? State these reasons in specific terms directly related to growing and importing of peanuts.

10. Suppose the owner of a large supermarket in New York City was trying to decide on whether he should purchase olives from California or from Spain. Assuming the price of the olives delivered in New York was the same for both California and Spanish olives, and that the quality of the olives was the same, what kinds of problems would the owner of the supermarket have in purchasing the olives from Spain in contrast to purchasing them from California?

NOTE: On the examinations distributed to students, space was provided to answer each question directly on the test paper.

ATTITUDE SCALE

NAME__________________________________ DATE_______________

SCHOOL__________________________ GRADE________ AGE_________

BOY GIRL (circle one)

What is your father's occupation? (Or mother's if father not working)

____

Listed below are seven short paragraphs, each describing how a person might feel about studying ECONOMICS. Please read all the descriptions, and then check the paragraph that best describes how you feel about studying economics. Even if you've never studied economics in school and don't know exactly what it would be like, just give us your best guess. There is no right or wrong answer. We're interested only in your opinion, so check the paragraph that best describes how you feel about studying economics.

______ 1. Studying economics is of tremendous value, and I'd really enjoy it. It is one of the most important subjects I know, and everyone should be required to study it.

______ 2. Studying economics is very profitable for everyone who takes it. It is a worthwhile subject and most students should have the chance to study it.

______ 3. Studying economics would benefit a student. It deals with universal problems and teaches you to think accurately and efficiently.

______ 4. Studying economics is interesting. It is a useful subject that serves the needs of many students.

______ 5. Studying economics is all right. It has its merits and fulfills its purpose. I'd be willing to spend time studying this subject.

______ 6. Studying economics is not a bore. It has its merits and its drawbacks, but on the whole I think its merits probably somewhat outweigh its drawbacks.

______ 7. Studying economics won't do anybody any harm. I haven't any definite like or dislike for this subject. It might be worthwhile if it were taught right.